17-132

TRANSCRIPT OF RECORD.

SUPREME COURT OF THE UNITED STATES.

No. 142.

REUBEN HOFFHEINS, APPELLANT,

vs.

C. RUSSELL & CO., CLEMENT RUSSELL, WILLIAM K. MILLER, AND JAMES S. TONNER.

APPEAL FROM THE CIRCUIT COURT OF THE UNITED STATES FOR THE NORTHERN DISTRICT OF OHIO.

FILED NOVEMBER 10, 1879.

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1 UNITED STATES OF AMERICA,
Northern District of Ohio:

Pleas in the circuit court of the United States, northern district of Ohio, eastern division, held by consent of parties before the Hon. John Baxter, circuit judge, at chambers, on the 28th day of November, A. D. 1878, in the cause within entitled.

AUGUSTUS J. RICKS, *Clerk.*

2 *Bill.*

In the circuit court of the United States for the northern district of Ohio.

To the honorable the judges of the circuit court of the United States for the northern district of Ohio.

Reuben Hoffheins, a citizen and resident of the State of Pennsylvania, James A. Saxton, a citizen and resident of the State of New York, and George W. Crouse, a citizen and resident of the State of Ohio, bring this their bill of complaint against C. Russell and Company, a body corporate, duly created under the laws of Ohio, whose principal place of business is at Canton, Ohio, in said northern district, and Clement Russell, William K. Miller, and James S. Tauner, citizens of Ohio, and resident within said northern district.

And therefore your orators complain and say, that they are informed and believe that your orator Reuben Hoffheins was the first, and your orator Reuben Hoffheins knows that he was the original, inventor of new and useful improvements in harvesters, fully described in the letters patent hereinafter mentioned, and which had not been known or used before his said invention.

And your orator further shows unto your honors that your orator Reuben Hoffheins, being so as aforesaid the first inventor and discoverer of said improvements, and also being a citizen of the United States, did, on the 20th day of May, A. D. 1862, upon due ap-
3 plication therefor, obtain letters patent of the United States for said invention, and in due form of law, under the seal of the Patent Office of the United States, signed by the Secretary of the Interior, and countersigned by the Commissioner of Patents of the United States, bearing date the day and year last aforesaid, whereby there was granted to your orator Reuben Hoffheins, his heirs, executors, administrators, and assigns, or intended so to be, for the term of seventeen years from and after the date of said letters patent, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said invention and improvement, which said letters patent are now remaining of record in the Patent Office of the United States, and by virtue whereof your orator Reuben Hoffheins became and was the sole owner of all the rights and privileges granted and secured by said letters patent, as by said letters patent, or a duly authenticated copy thereof, in court ready to be produced, if required, will appear.

And your orator further shows unto your honors that afterwards your orator Reuben Hoffheins, having for good and lawful cause surrendered said letters patent to the Commissioner of Patents of the United States, and having made due application therefor, and having in all things complied with the acts of Congress in such case made and provided, did, on the 10th day of April, A. D. 1866, obtain new reis-

sued letters patent for the residue of said term of seventeen years, in place of said original patent to him, and for the same invention as was described in and intended to be secured by the aforesaid original
4 letters patent, which said last-mentioned reissued letters patent were issued in due form of law, under the seal of the Patent Office of the United States, signed by the Secretary of the Interior, and countersigned by the Commissioner of Patents of the United States, and dated the day and year last aforesaid, and numbered reissue 2224, as by said last-mentioned letters patent, or a duly authenticated copy thereof, in court ready to be produced, if required, will appear.

And your orators further show unto your honors that, by virtue of the premises, you' orator Reuben Hoffheins became and was the sole and exclusive legal owner of said letters patent and inventions, and of all the rights and privileges granted and secured, or intended to be granted and secured, thereby, as aforesaid, within and throughout the United States.

And your orators further say that they are informed and believe that your orator Reuben Hoffheins was the first, and your orator Reuben Hoffheins knows he was the original, inventor of new and useful improvements in harvesters, fully described in the letters patent hereinafter mentioned, and which had not been known or used before his said invention.

And your orators further show unto your honors that your orator Reuben Hoffheins being so as aforesaid the first inventor and discoverer of said improvements, and being also a citizen of the United States, did, on the 3rd day of November, A. D. 1863, upon due application therefor, obtain letters patent of the United States for said invention in due form of law, under the seal of the Patent Office
5 of the United States, signed by the Secretary of the Interior, and countersigned by the Commissioner of Patents of the United States, bearing date the day and year last aforesaid, whereby there was granted to your orator Reuben Hoffheins, his heirs, executors, administrators, and assigns, or intended so to be, for the term of seventeen years from and after the date of said letters patent, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said invention and improvement, which said letters patent are now remaining of record in the Patent Office of the United States, and by virtue whereof your orator Reuben Hoffheins became and was the sole owner of all the rights and privileges granted and secured by said letters patent, as by said letters patent, or a duly authenticated copy thereof, in court ready to be produced, if required, will appear.

And your orators further show unto your honors that afterwards your orator Reuben Hoffheins having for good and lawful cause surrendered said letters patent to the Commissioner of Patents of the United States, and having made due application therefor, and having in all things complied with the acts of Congress in such case made and provided, did obtain new reissued letters patent in two divisions for the residue of said term of seventeen years from the date of said divisions, respectively, in place of said original patent to him, and together for the same invention as was described in and intended to be secured by the last aforesaid original letters patent, which said last-mentioned reis-
6 sued letters patent were issued for separate and distinct parts of said invention, the first of said divisions bearing date February 28th, 1865, and numbered 1888, and the second of said divisions bearing

date November 7th, 1865, and numbered 2102, each of which said reissued letters patent were issued in due form of law, under the seal of the Patent Office of the United States, signed by the Secretary of the Interior, and countersigned by the Commissioner of Patents of the United States, and were, respectively, dated and numbered as aforesaid, as by said reissued letters patent, or duly authenticated copies thereof, in court ready to be produced, if required, will appear.

And your orators further show unto your honors that afterwards your orator, Reuben Hoffheins, having for good and lawful cause surrendered said reissued letters patent No. 2102 to the Commissioner of Patents of the United States, and, having made due application therefor, and having in all things complied with the acts of Congress in such cases made and provided, did, on the 19th day of February, A. D. 1867, obtain new reissued letters patent for the residue of said term of seventeen years, in place of said last-mentioned reissued letters patent to him, and for the same invention as was described in and intended to be secured by the last aforesaid original letters patent, which said last-mentioned reissued letters patent were issued in due form of law, under the seal of the Patent Office of the United States, signed by the Secretary of the Interior, and countersigned by the Commissioner of Patents of the United States, and dated the day and year last aforesaid,

7 and numbered reissue 2490, as by said last-mentioned reissued letters patent, or a duly authenticated copy thereof, in court ready to be produced, if required, will appear.

And your orators further show unto your honors, that your orator Reuben Hoffheins, on the first day of March, A. D. 1870, by an assignment in writing, bearing date the day and year last aforesaid mentioned, sold, assigned, and transferred unto your orators James H. Saxton and George O. Crouse the equal undivided two-thirds of all the right, title, and interest, which your orator Reuben Hoffheins had in the said inventions and improvements by virtue of said reissued letters patent, numbered, respectively, 2224 and 2490, as aforesaid, as by said assignment, or a duly authenticated copy thereof, in court ready to be produced, if required, will fully appear.

And your orators further show unto your honors that, by virtue of the premises and the aforesaid assignment of your orator Reuben Hoffheins, to your orators James A. Saxton and George W. Crouse, your orators became and were the sole and exclusive legal owners of said last-named reissued letters patent and inventions, and of all the rights and privileges granted and secured thereby, as aforesaid, within and throughout the United States.

And your orators further show unto your honors that your orator James A. Saxton, on the 17th day of November, 1874, and George W. Crouse, on the 13th day of November, 1874, by instruments of writing of the respective dates aforesaid, assigned and transferred unto your

8 orator Reuben Hoffheins all the right, title, and interest of your orators Saxton and Crouse, or either of them, in all claims to profits, royalties, fees, and damages arising out of the use or infringement by any person or persons of any or all of the improvements or inventions secured by said letters patent, or either of them.

And your orators further show unto your honors, that since the granting of said several reissued letters patent your orator Hoffheins has invested and expended large sums of money, and has been to great trouble in and about said inventions, and for the purpose of making the same profitable to himself and useful to the public; and harvesters, containing and employing the said inventions and made according to

the same, have been made and sold by your orators, to the great advantage of themselves and of the public, and that said inventions have been and are of great benefit and advantage, and since the assignment to your orators of said several reissued letters patent, as aforesaid, large numbers of harvesters, made and constructed according to the said inventions, as shown and described in and by said several reissued letters patent, have been made and sold by your orators; and the said harvesters, so sold by your orators, have been marked, "patented," with the respective dates of the granting of each of said original patents, and the public have acknowledged and acquiesced in the validity of said patents and the aforesaid rights of your orators; and your orators have invested large sums of money for the purpose of supplying the demand for said inventions throughout the United States, and your orators would have realized large gains and profits therefrom if infringements by said defendants and their confederates had been prevented.

9 Yet the said defendants, well knowing the premises and the rights secured to your orators aforesaid, but contriving to injure your orators and to deprive them of the benefits and advantages which might, and otherwise would, have accrued unto them from said invention after the granting of each of said reissued letters patent aforesaid, and after the assignment to your orators of said several reissued letters patent, as aforesaid, and prior to the thirteenth day of November, A. D. 1874, the said defendants made and used, and caused to be made and used, harvesters in said northern district of Ohio, and there sold them to others to be used in said district, and the said defendants have carried on the business of making and selling them, by agents and otherwise, in various other places in the United States, and that such manufacture and sale and use of said harvesters was without the license or consent, and against the will of your orators, and in violation of their rights, and in infringement of the aforesaid letters patent assigned to your orators as aforesaid; that is to say, in infringement and violation of the said reissued letters patent No. 2224, which were reissued to your orator Reuben Hoffheins, April 10th, A. D. 1866, as aforesaid, and in infringement and violation of the said reissued letters patent No. 2490, reissued to your orator Reuben Hoffheins February 19th, 1867, as aforesaid, each and both of which said reissued letters patent were duly assigned to your orators, as hereinbefore shown; and that said unlawful acts and infringements were committed with a full knowledge of the rights of your ora-

10 tors and in defience of their rights; and that said defendants, since the assignment of said several reissued letters patent to your orators, and prior to the 13th day of November, A. D. 1874, in the city of Canton, in said northern district of Ohio, constructed and sold and offered for sale harvesters made according to, employing, containing, and using said inventions and improvements and substantial and material parts thereof, and that said defendants still continue so to do, and are threatening to make, and cause to be made, use, and sell the aforesaid harvesters in large quantities, and to supply the market therewith, and sell the same for such prices as they can obtain, to the effect of depriving your orators of sales of their machines.

And your orators further show unto your honors that the actings and doings of the defendants were all in defiance of the rights required by and secured to your orators as aforesaid, and to their great irreparable loss and injury, and by which they have been deprived of great gains and profits which they might and otherwise would have

obtained, but which have been received and enjoyed by said defendants by and through their unlawful acts and doings.

And your orators further show unto your honors, on information and belief, that said defendants made and sold large numbers of said harvesters, and made and realized large profits and advantages therefrom, but to what extent and how much exactly your orators do not know, and pray a discovery thereof.

And your orators further show unto your honors that they re-
11 quested the said defendants to account for and pay to your orators the profits by them realized and acquired from their aforesaid unlawful acts and the damages which the complainants have sustained thereby, but the said defendants refused so to do, and still refuse to pay unto your orators any part of said profits so as aforesaid by them unlawfully acquired, or any part of the damages so as aforesaid sustained by your orators.

And your orators further show unto your honors, upon information and belief, that the defendants in this suit were engaged in the infringements and unlawful acts complained of in the city of Canton, in said northern district of Ohio; but whether defendants were so engaged in the manufacture, use, and sale of said harvesting machines in other places, or whether they have been otherwise concerned therein, your orators do not know and cannot state, and pray a discovery thereof by said defendants, and that they may fully and particularly state and set forth how and where they were so engaged as aforesaid in the manufacture, use, and sale of said harvesters, and how long they were engaged or concerned therein, and in what way.

And for as much as your orators can have no adequate relief except in this court, to the end therefore that said defendants may, if they can, show why your orators should not have the relief hereby prayed for, and may, upon their corporeal oaths and according to their best and utmost knowledge, remembrance, information, and belief, full, true, direct and perfect answer make to the premises, and to all the several matters hereinbefore charged and stated, as fully and
12 particularly as if severally and separately interrogated as to each and every of said matters, and may be compelled to account for and pay to your orators the profits acquired and damages suffered by your orators from the aforesaid unlawful acts, and that treble damages may be awarded to your orators on the final hearing hereof.

May it please your honors to grant unto your orators the writ of subpœna issuing out of and under the seal of this honorable court, directed to said defendants, commanding them by a certain day and under a certain penalty to be and appear in this honorable court, then and there to answer the premises, and to stand to and abide such order and decree as may be made against them.

REUBEN HOFFHEINS.

S. H. BOWMAN, *Springfield, Ohio,*
Sol. & Counsel for Complainants.

UNITED STATES OF AMERICA,
District of Columbia, ss:

On the 17th day of February, A. D. 1875, at Washington City, in said District, before me personally appeared Reuben Hoffheins, who being by me duly sworn, did for himself and on behalf of his co-complainants, James A. Saxton and George W. Crouse, depose and say, that he has read the foregoing bill of complaint subscribed by him, and knows the contents thereof, and the same is true of his own knowledge, except as

to matters therein stated on information and belief, and as to
13 those matters, he believes it to be true.

[SEAL.] JOHN W. FRAZER,
U. S. Commissioner, Dist. of Columbia.

I acknowledge myself security for all costs for which the complainants may be liable in this suit.

HENRY R. DICKINSON.
J. A. ALLEN.

Filed March 1st, 1875.

14 THE UNITED STATES OF AMERICA,
Northern District of Ohio, ss:

The President of the United States of America to the marshal of the northern district of Ohio, greeting:

You are hereby commanded to summon C. Russell & Co., Clement Russell, William K. Miller, and James S. Tonner, if they be found in your district, to be and appear in the circuit court of the United States within and for the district aforesaid, at Cleveland, on the first Monday in April next, to answer a certain bill in chancery filed and exhibited in said court against them by Reuben Hoffheins, James A. Saxton, and George W. Crouse.

Hereof they are not to fail under the penalty of the law, thence ensuing, and have you then and there this writ.

Witness the honorable Morrison R. Waite, Chief Justice of the United States, this 1st day of March, A. D. 1875, and in the 99th year of the Independence of the United States of America.

[SEAL.] EARL BILL, *Clerk*,
By CHAS. H. BILL,
Deputy Clerk.

MEMORANDUM.—The said defendants are required to enter their appearance in this suit, in the clerk's office of said court, on or before the first Monday of April, 1875, otherwise the said bill may be taken pro confesso.

EARL BILL, *Clerk.*

(Indorsed:) No. . United States circuit court, northern district of Ohio. In chancery. vs. . Subpœna. Returnable, , 18 . Rule day for appearance, , 18 . Rule day for answer, , 18 . Returned and filed, , 18 . , clerk. , complainant's solicitor.

ha acknowledged security for all costs for which the complainant may be liable in this suit.

15 In the circuit court of the United States in and for the northern district of Ohio. In equity.

REUBEN HOFFHEINS, JAMES A. SAXTON, AND George W. Crouse
vs.
C. RUSSELL & CO., CLEMENT RUSSELL, William K. Miller, and James S. Tonner.

Enter my appearance for defendants in the above entitled cause.

GEORGE HARDING,
Solicitor and Counsel for Defendants.

16 In the circuit court of the United States for the northern district of Ohio. In equity.

The replication of Reuben Hoffheins, James A. Saxton, and George W. Crouse, complainants, to the joint and several answer of C. Russell and Company, William K. Miller, Clement Russell, and James M. Tonner, respondents:

The repliants, saving and reserving unto themselves all and all manner of advantage of exception to the manifold insufficiencies of the said answer, for replication thereunto saith that they will aver and prove their said bill to be true, certain, and sufficient in the law to be answered unto, and that the said answer of the said defendants is uncertain, untrue, and insufficient to be replied unto by these repliants. Without this, that any other matter or thing whatsoever in the said answer contained, material or effectual in the law to be replied unto, confessed and avoided, traversed or denied, is true. All which matters and things these repliants are and will be ready to aver and prove as this honorable court shall direct, and humbly pray as in and by their said bill they hath already prayed.

S. A. BOWMAN,
Counsel for Compl'ts.

Filed Aug. 21, 1875.

17 In U. S. circuit court, northern district of Ohio.

REUBEN HOFFHEINS ET AL.
vs.
C. RUSSELL ET AL.
} In chancery. No. 2719.

And now, to wit, Sept. 9th, 1878, on motion of counsel for defendants, complainants' counsel present and opposing, the above entitled cause is continued, and counsel for complainants and defendants consenting in open court, it is ordered that the said cause stand for hearing before the honorable circuit judge, holding court at chambers, in the city of Knoxville, State of Tennessee, on the third Monday of November, 1878, without further notice or order, and that the clerk produce the pleadings and proofs at that time and place, provided that complainants may revoke this agreement or consent aforesaid by giving thirty days' notice thereof to defendants' counsel, the clerk, and the honorable circuit judge.

18 REUBEN HOFFHEINS ET AL.
vs.
C. RUSSELL ET AL.

COMPLAINANTS' EXHIBIT.

Certified copies of assignment.

Department of the Interior, U. S. Patent Office. To all persons to whom these presents shall come, greeting:

This is to certify that the annexed is a true copy from the records of this office of all assignments of record under reissue letters patent No. 2224 and No. 2490, recorded in the volumes as stated on the margin of each copy respectively, and that said annexed copies have been com-

pared by me with the originals, and that they are correct transcripts therefrom and of the whole of the originals.

In testimony whereof I, Ellis Spear, Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this thirty-first day of August, in the year of our Lord one thousand eight hundred and seventy-eight, and of the Independence of the United States the one hundred and third.

[SEAL.] ELLIS SPEAR,
Commissioner.

19 [Liber I[12], p. 502.]

Whereas Reuben Hoffheins, of York, county of York, and State of Pennsylvania, did obtain letters patent of the United States for certain improvements in harvesting machines, which letters patent bear date May 20th, A. D. 1862, and reissued April 10th, 1866, and are numbered 2224; second, letters patent which bear date Nov. 3rd, A. D. 1863, and reissued in two divisions, first dated February 28th, A. D. 1865, numbered 1888, second division dated February 19th, A. D. 1867, and numbered 2490, and one reissue now pending in the office of the Commissioner of Patents at Washington, D. C.; third, letters patent which bear date July 4th, A. D. 1865, and numbered 48557; and

Whereas said Reuben Hoffheins did obtain and is now the owner of the following patents by assignment, viz: One reissued to John H. Mears, dated March 4th, A. D. 1862, and numbered 34584; one issued to D. O. De Wolf, dated June 1st, A. D. 1858, and numbered 20411; one issued to Thomas I. Staley, dated December 15th, A. D. 1857, and reissued in two divisions, first dated November 6th, A. D. 1866, and numbered 2483, second division dated December 15th, 1867, and numbered 2783; also, an interest in the several patents granted to Robert Brown, and by said Brown assigned to Charles Mason, R. W. Fenwick, and Reuben Hoffheins, dated January 30th, A. D. 1866, and recorded in liber P[8], page 43, of transfers of patents, and by said Mason and Fenwick assigned to said Hoffheins, dated Dec. 13th, A. D.
20 1867, and recorded February 17th, A. D. 1870, liber P[12], page 161. Reference to the record of said assignment is hereby made for a description of said interest.

Now, therefore, for the consideration of one dollar and other valuable considerations received to my satisfaction of James A. Saxton, George W. Crouse, and Reuben Hoffheins, the receipt whereof is hereby acknowledged, I have assigned, sold, and set over, and do hereby assign, sell, and set over unto myself and the said James A. Saxton and George W. Crouse, to each one-third interest in all the right, title, and interest which I have in the said inventions, as secured to me by said letters patent and by said assignments, or which may be secured by me by any reissue or extensions of any of the above-described patents in my name.

To be held and enjoyed by said James A. Saxton, George W. Crouse, and myself.

In testimony whereof I hereunto set my hand and affix my seal this first (1st) day of March, A. D. 1870.

R. HOFFHEINS. [SEAL.]

In presence of—
JACOB MILLER,
GEO. COOK.
[5. M'ch 1870. 5.]

Recorded M'ch 29, 1870.

21 [Liber N[18], page 423.]

Whereas, Reuben Hoffheins, of York, county of York, and State of Pennsylvania, did obtain letters patent of the United States for certain improvements in harvesting machines, which letters patent bear date May 20th, A. D. 1862, and reissued April 10th, 1866, and are numbered 2224; second, letters patent which bear date November 3rd, A. D. 1863, and reissued in two divisions; first dated Feb. 28th, A. D. 1865, numbered 1888, second division dated February 19th, A. D. 1867, and numbered 2490, and one reissue, now pending in the office of the Commissioner of Patents at Washington, D. C.; third, letters patent which bear date July 4th, A. D. 1865, and numbered 48557; and

Whereas said Reuben Hoffheins did obtain and is now the owner of the following patents by assignment, viz: One issued to John H. Mears, dated March 4th, A. D. 1862, and numbered 34584; one issued to D. O. De Wolf, dated June 1st, A. D. 1858, and numbered 20411; one issued to Thomas I. Staley, dated December 15th, A. D. 1857, and reissued in two divisions; first, dated Nov. 6th, A. D. 1866, and numbered 2483; second division dated Dec. 15th, A D. 1867, and numbered 1783; also, an interest in three several patents granted to Robert Brown, and by said Brown assigned to Charles Mason, R. W. Fenwick, and Reuben Hoffheins, dated January 30th, A. D. 1866, and recorded in Liber P[8], page 43, of transfers of patents, and by said Mason and Fenwick assigned to said Hoffheins, dated December 13th, A. D. 1867, and recorded February 17th, A. D. 1870, Liber F[12], page 161.

Reference to the record of said assignment is hereby made for a description of said interest.

22 Now, therefore, for the consideration of one dollar and other valuable consideration received to my satisfaction of James A. Saxton, George W. Crouse, and Reuben Hoffheins, the receipt whereof is hereby acknowledged, I have assigned, sold, and set over, and do hereby assign, sell, and set over unto myself and the said James A. Saxton and George W. Crouse, to each one-third interest in all the right, title, and interest which I have in the said inventions, as secured to me by said letters patent and by said assignment, or which may be secured by me by any reissue or extension of any of the above-described patents in my name.

To be held and enjoyed by James A. Saxton, George W. Crouse, and myself.

In testimony whereof I hereunto set my hand and affix my seal this first (1st) day of March, A. D. 1870.

R. HOFFHEINS. [L. S.]

In presence of—
JACOB MILLER,
GEORGE COOK.

[5 M'ch 1870.]

Recorded M'ch 29th, 1870.

For and in consideration of one dollar and other valuable considerations to me in hand paid by Reuben Hoffheins, of York, York County, Pennsylvania, the receipt of which is hereby acknowledged, I, George W. Crouse, of Akron, Summit County, Ohio, do hereby reassign, transfer, and convey to the said Reuben Hoffheins, his heirs and assigns, all the right, title, and interest in and to the several patents, reissues, and

extensions, which were assigned to me by Reuben Hoffheins, by
23 an assignment dated March 1st, 1870, and recorded in the Patent Office of the United State, in Liber I[12], page 402, of transfer of patents, of which said assignment the foregoing is a true copy, and I further empower the said Reuben Hoffheins to sue for and collect all fees and royalties due, or becoming due, on said patents, reissues, and extensions during my ownership of an interest therein as fully and entirely as though I had never had any ownership therein.

This assignment is executed as a duplicate of one of the same date, tenor, and effect, which has become lost.

Akron, Ohio, November 13th, 1874.

GEORGE W. CROUSE.

W. C. PARSONS.

Signed and delivered in our presence this 26th day of December, 1874.

W. N. LEOHURS.
WEN NEWCOMB.

Rec'd Jan. 7, 1875.

For and in consideration of one dollar and other valuable considerations to me in hand paid by Reuben Hoffheins, of York, Pennsylvania, the receipt of which is hereby acknowledged, I, James A. Saxton, formerly of Canton, Ohio, do hereby reassign, transfer, and convey to the said Reuben Hoffheins, his heirs and assigns. all the right, title, and interest in and to the several patents, reissues, and extensions,
24 which were assigned to me by Reuben Hoffheins by an assignment dated March 1st, 1870, and recorded in the Patent Office of the United States in Liber I12, page 402, of transfers of patents, of which said assignment the foregoing deed signed by Reuben Hoffheins is a true copy; and I further empower the said Reuben Hoffheins to sue for and collect all fees and royalties due, or becoming due, on said patents, reissues, and extensions during my ownership of an interest therein.

This assignment is executed in lieu of one of the same date, tenor and effect which has become lost.

New York, November 17th, 1874.

JAMES A. SAXTON.

Witness:

Signed and delivered in our presence, this 29th day of December, 1874.

C. I. WETMORL.
E. N. DREURYE.

Received Jan. 7th, 1875.
Ex'd E. A. M. Mr. V.
Filed November 18th, 1878.

25 *Complainants' Exhibit, Hoffheins's file-wrapper and contents, No. two* (2), 1863.

Department of the Interior, United States Patent Office. To all persons to whom these presents shall come, greeting:

This is to certify, that the annexed is a true copy from the files of this office of the file-wrapper and contents, in the matter of the letters

patent granted Reuben Hoffheins, dated November 3, 1863, No. 40481 for "improvements in harvesters."

In testimony whereof I, W. H. Doolittle, Acting Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this fourteenth day of May, in the year of our Lord one thousand eight hundred and seventy-seven, and of the Independence of the United States the one hundred and first.

[SEAL.] W. H. DOOLITTLE,
Acting Commissioner.

26 [1 dollar 1. R. H., May 8th, 1863. 1 dollar 1.]

Petition.

To the Commissioner of Patents of the United States of America:

The petition of Reuben Hoffheins, of Dover, in the county of York, and State of Pennsylvania, respectfully represents that your petitioner has invented certain new and useful improvements in harvesters, which he verily believes has not been known or used prior to the invention thereof by your petitioner. He therefore prays that letters patent of the United States of America may be granted to him therefor, vesting in him and his legal representatives the exclusive right to the same, upon the terms and conditions expressed in the act of Congress in that case made and provided, he having paid fifteen dollars into the Treasury of the United States and otherwise complied with the requirements of said act; and he hereby authorizes O. D. Munn, S. H. Wales, and A. E. Beach, of the firm of Munn and Co., of the cities of New York and Washington, or their accredited agents, to act as his attorneys in presenting the application, and in making all such alterations and amendments as may be required, and to sign his name to the drawings.

REUBEN HOFFHEINS.

Address: Munn and Co., Washington, D. C.

27 *Oath.*

CITY AND COUNTY OF WASHINGTON,
District of Columbia, ss:

On this eighth day of August, 1863, before the subscriber, a notary public in and for said county, personally appeared the above-named Reuben Hoffheins, and made solemn oath, that he verily believes himself to be the original and first inventor of the within described improvement in harvesters, and that he does not know or believe that the same was ever before known or used, and that he is a citizen of the United States.

[SEAL.] EDM. F. BROWN,
Notary Public.

[5. 5. E. F. B. 8 Aug., 1863. 5. 5.]

28 To all whom it may concern:

Be it known that I, Reuben Hoffheins, of Dover, in the county of York and State of Pennsylvania, have invented certain new and useful Improvements in Harvesters; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a front perspective view of my improved machine as arranged for cutting grain.

Figure 2 is a rear perspective view of the same in the form of a mower.

Figure 3 is a side elevation of the same as arranged for transportation.

Figure 4 is a perspective view of the main frame detached.

Figure 5 is a plan of the top of the post on which the rake is mounted.

Similar letters of reference indicate corresponding parts in the several views.

My present improvement consists:

1st. In a peculiar construction and combination of frame gearing and double driving-wheels for purposes hereinafter to be explained.

2nd. In a device for affording protection to the main crank-shaft and strengthening the main frame.

3rd. In the use of a movable tongue, which may be secured in various positions to adapt it for various uses of the machine.

4th. In a device for permitting the finger beam to turn freely on its own axis.

29

Erased by am'd't filed Oct. 15, 1863.

5th. In a device for supporting and attaching the inner side of the platform.

6th. In a peculiar combination of fender and divider.

Erased Oct. 16, 1863

7th. In a peculiar device for communicating motion to a revolving rake.

In order that others skilled in the art to which my invention appertains may be enabled to fully understand and use the same, I will proceed to describe its construction and operation.

The main frame A A is cast in one piece in the form represented in Figure 4, the ends being lef tdisconnected to facilitate casting and to reduce the weight. B B′ are two driving-wheels adapted to turn on the axle C, but each furnished with a pawl, *b*, taking into a ratchet-wheel, *b′* on the axle, so as to impart rotation thereto when the wheel is turning forward. b^2 represents a spring bearing against the square heel of the pawl *b* to hold it either in or out of gear in whichever position it may be set.

C′ is the main gear-wheel on the axle C, which gears with a pinion *d*, on the transverse shaft D, which carries at its other end a bevel cog-wheel, D′ gearing with a bevel pinion, *e* on the crank-shaft E.

E′ is the crank-wheel, mounted on the rear end of the shaft E, and imparting motion to the cutter F by means of a pitman, *f*, which is provided with a swivel, *f′* formed of a screw-thread and nut, to permit the rolling of the finger beam without straining or binding the cutter. *a* represents a flange cast upon the main frame for the purpose of imparting additional strength thereto and also protecting the crank-shaft E.

30

G is the finger beam, attached at its respective ends to the inner shoe, H, and the outer shoe or divider, H′.

The inner shoe, H, is pivoted by its center at *h* to the drag-bar I by a universal joint and at its respective ends to guides *h′ h′*, which work is vertical dovetail slots formed in pendants *i i* on the drag-bar in such a manner as to brace the beam horizontally while permitting it to turn freely on its axis, either for the purpose of conforming to the undulations of the ground, to rise over an obstruction, or to be turned up edgewise and carried on the machine in manner represented in figure 3, the point of the divider H′ resting in a staple, *k*, in the side of the tongue K. The tongue is attached to the main frame by means of two

bolts, k', passing through it and through notches or holes $j\ j$ or $j'\ j'$ at one side of or near the center of the frame, so as to permit the adjustment of the said tongue to a position between the wheels for cutting grain, as illustrated in figure 1, or on the outside for cutting grass, as illustrated in figure 2. In either position and extension, K′, from the tongue affords means for supporting the inner end of the finger beam. This is effected in the illustration given in figure 1 by a chain, J, rising from the outer end of a rigid arm, J′, which projects inward from the beam, and in the illustration shown in figure 2 by a chain, J^2, attached at its lower end by a staple, h^2, in the lateral stay-rod H^2, and at its
31 upper end to a segment lever, M, fulcrumed at m on the rear end of the tongue, so that by raising the said lever the heel of the beam may be raised to any required height. A rack, M′, holds the lever M in any position in which it may be placed. H^3 represents a track-clearer pivoted in front to the rear of the divider or outer shoe, H′. On the rear end of the inner shoe is formed a lug, h^4, for the attachment of the inner side of the segmental grain platform P. The said platform is secured to the finger beam at suitable intervals by straps O and bolts o'. N represents a caster-wheel, secured adjustably to the outer edge of the platform, and employed to carry the same at any desired height. Q represents a grain-fender, of sheet-iron, pivoted in front upon the cast-iron divider H′, and adjustable in height at its rear end by a bolt placed in either of the holes g.

On the inner side of the grain platform near the heel of the finger beam is firmly mounted a post, R, which may incline over towards the main frame, as shown in figure 1. The said post is braced by stay-rods $r\ r\ r$, the respective lower ends of which may be bolted to the platform, the front of the shoe H, and the outer end of the rigid arm J′, so as to secure the post in rigid connection with the platform and cause it to follow all the motions of the latter. The post R is provided at its upper end with a cogged segment, S, and a segmental guide-way, S′, (see figure 5) by which the revolving rakes are turned and held in the required positions, as will be presently explained. T is an inverted crown-wheel, provided with a vertical shaft, which is journaled
32 in a box on the upper part of the post R. Rotation is communicated to the crown-wheel T by an extensible tumbling shaft, U U′, of square form, made in two parts, sliding one within the other, so as to assume any length which the positions of the parts may require, and work equally well in any position. The said extensible tumbling shaft is connected at its respective ends by universal joints to pinions $u'\ u^2$, the first (u') mounted upon the main frame and gearing with a pinion, u^3, on the axle C, and the second (u^2) mounted on the post R and gearing with the crown-wheel T.

The rake or reel arms V V′ are mounted in pairs upon the ends of horizontal shafts $v\ v'$, journaled at right angles across the top or back of the inverted crown-wheel T. At the junction of each of the rake or reel arms with the shafts $v\ v'$ is secured a cogged segment, v^2 adapted to gear with the fixed cogged segment S, and in passing over the same to turn the reel or rake on that side to its inverted and elevated position, in which position it is held during about one-fourth of its revolution by a rigid arm v^3, resting on the segmental guide-way, s', and it will be apparent that the corresponding reel or rake arm being rigidly secured to the opposite end of the same shaft will be held in its lower or working position during the same period.

W represents the driver's seat.

33 OPERATION.

For cutting grain the parts are arranged as shown in figure 1, the successive rake and reel arms decending in front of the finger beam deflect the grain backward toward the cutters in customary manner and the rakes remove the cut grain in compact gavels from the platform. The use of the rigid arm J′ projecting inward from the finger beam and supporting the latter and the attached platform from the rear of the tongue diminishes the abruptness of the motions of the cutting apparatus and platform without restricting their freedom in conforming to undulations of the ground. The peculiar devices for transmitting motion to the rake adapt it to act equally well at any height or angle of the platform.

In mowing the cutters are left perfectly free, but may be raised or lowered by the operator in the manner already explained, the tongue K being transferred to a position on the outside of the wheel B′.

The peculiar construction and attachment of the inner shoe adapt the finger beam to roll freely on its axis in use or to be turned over on its edge and folded compactly against the frame, as illustrated in figure 3, to adapt the machine to be moved from place to place.

The pawl or ratchet connection between the driving-wheels and their axle adapt the machine to be turned or backed with perfect freedom and also a'ford ready means for throwing the entire machinery out of gear, which is effected by raising the pawls out of the ratchets,
34 where they will be held by the springs b^2.

The cutting apparatus may be thrown out of gear by moving the transverse shaft D longitudinally by a lever, D^2, and providing it with a pin, d^2, which in one position of the shaft will fit in a recess in the hub of the wheel so as to impart rotation thereto, and in the other position will permit the shaft to turn independently of the wheel. This lever may be moved by the hand or foot of the driver.

Having thus described my invention, what I claim as new therein, and desire to secure by letters patent, is:

1st. The main frame and gear frame AA, constructed as described, open at each end when used, in combination with shafts, gearing, and double driving-wheels, arranged and operating substantially as and for the purpose specified.

2nd. The flange *a*, cast or formed upon the gear frame for the combined purpose of strengthening the latter and protecting the crank-shaft E, as hereinbefore explained.

3rd. The movable tongue K, adapted to be attached to the frame on either side of the wheel B′, and employed to support or raise the inner end of the beam.

4th. Attaching the shoe to the drag-bar by a transverse swivel joint to permit the finger beam to turn on its axis to elevate or depress the points of the fingers or to fold the beam against the frame for transportation.

Insert A, of am'd't filed Oct. 15th, 1863.

5th. The lug h^4, formed upon the rear of the shoe for attaching and sustaining the platform, as described.

Erased Oct. 15th, 1863.

6th. The fender Q, formed upon or employed in combination with a cast-iron divider in a manner substantially as and for the purposes specified.

35

See amd't erased by amd't filed Oct. 14, 1863.

7th. The extensible or sliding and jointed tumbling shaft $v\,v'$, formed in two parts, sliding one within the other, and employed to communicate motion to a rake of the construction specified.

REUBEN HOFFHEINS.

Witnesses.
OCTAVIUS KNIGHT.
CHARLES SMITH.

UNITED STATES PATENT-OFFICE.

SIR: Your application for letters patent for alleged improvement in harvesters has been examined, and it is found that the fourth clause of your claim is anticipated in the patents of C. Wheeler, March 12th, 1861, and G. E. Chenoweth, Nov. 15th, 1859; the 5th clause in the patents of John G. Dunham, Sept. 22nd, 1859, and J. Smalley, April 12th, 1859; the 6th in the patent of F. H. Manney, April 30th, 1861, and the 7th in the patent of Osborne and Kirby, assignees of W. A. Kirby, July 2nd, 1861. The specification is returned herewith for necessary amendment.

Respectfully, &c.,

REUBEN HOFFHEINS,
(Care of Munn and Co., Washington, D. C.)

Ams. 16; 313.

36 The specification of Reuben Hoffheins' Harvester is hereby amended by inserting at the end of the fourth clause of the claim the following:

A Insert.

When combined with bracing guides h', substantially as herein described.

Also by erasing the fifth and sixth clauses of the statement of the nature of the invention and of the claim, and cor'ecting the ordinal of the last clause in accordance therewith.

REUBEN HOFFHEINS,
By MUNN & CO., *Attorneys.*

WASHINGTON, D. C., *Oct.* 14, 1863.

The above application is further amended by erasing the last clause in the statement of the nature of the invention; also the last clause of the claim.

MUNN AND CO.,
Att'ys for R. Hoffheins.

OCT. 16TH, 1863.

37 U. S. PATENT OFFICE, *Feb.* 24, 1864.

SIR: Application has been made to this office for a patent for an alleged improvement in harvesters, which is shown but not claimed in the patent granted to you Nov. 3, 1863. The claim of said application is in the following words, viz: "The combination in a two-wheeled, hinge-joint machine of a driver's seat mounted upon the main frame with a raking mechanism mounted upon the finger-beam, and rotating on a vertical axis, or one nearly so, substantially in the manner de-

33 OPERATION.

For cutting grain the parts are arranged as shown in figure 1, the successive rake and reel arms decending in front of the finger beam deflect the grain backward toward the cutters in customary manner and the rakes remove the cut grain in compact gavels from the platform. The use of the rigid arm J′ projecting inward from the finger beam and supporting the latter and the attached platform from the rear of the tongue diminishes the abruptness of the motions of the cutting apparatus and platform without restricting their freedom in conforming to undulations of the ground. The peculiar devices for transmitting motion to the rake adapt it to act equally well at any height or angle of the platform.

In mowing the cutters are left perfectly free, but may be raised or lowered by the operator in the manner already explained, the tongue K being transferred to a position on the outside of the wheel B′.

The peculiar construction and attachment of the inner shoe adapt the finger beam to roll freely on its axis in use or to be turned over on its edge and folded compactly against the frame, as illustrated in figure 3, to adapt the machine to be moved from place to place.

The pawl or ratchet connection between the driving-wheels and their axle adapt the machine to be turned or backed with perfect freedom and also a'ford ready means for throwing the entire machinery out of gear, which is effected by raising the pawls out of the ratchets,
34 where they will be held by the springs b^2.

The cutting apparatus may be thrown out of gear by moving the transverse shaft D longitudinally by a lever, D^2, and providing it with a pin, d^2, which in one position of the shaft will fit in a recess in the hub of the wheel so as to impart rotation thereto, and in the other position will permit the shaft to turn independently of the wheel. This lever may be moved by the hand or foot of the driver.

Having thus described my invention, what I claim as new therein, and desire to secure by letters patent, is:

1st. The main frame and gear frame AA, constructed as described, open at each end when used, in combination with shafts, gearing, and double driving-wheels, arranged and operating substantially as and for the purpose specified.

2nd. The flange *a*, cast or formed upon the gear frame for the combined purpose of strengthening the latter and protecting the crank-shaft E, as hereinbefore explained.

3rd. The movable tongue K, adapted to be attached to the frame on either side of the wheel B′, and employed to support or raise the inner end of the beam.

4th. Attaching the shoe to the drag-bar by a transverse swivel joint to permit the finger beam to turn on its axis to elevate or depress the points of the fingers or to fold the beam against the frame for transportation.

Insert A, of am'd't filed Oct. 15th, 1863.

5th. The lug h^4, formed upon the rear of the shoe for attaching and sustaining the platform, as described.

Erased Oct. 15th, 1863.

6th. The fender Q, formed upon or employed in combination with a cast-iron divider in a manner substantially as and for the purposes specified.

35 7th. The extensible or sliding and jointed tumbling shaft *v v'*, formed in two parts, sliding one within the other, and employed to communicate motion to a rake of the construction specified.

See amd't erased by amd't filed Oct. 14, 1863.

REUBEN HOFFHEINS.

Witnesses.
OCTAVIUS KNIGHT.
CHARLES SMITH.

UNITED STATES PATENT-OFFICE.

SIR: Your application for letters patent for alleged improvement in harvesters has been examined, and it is found that the fourth clause of your claim is anticipated in the patents of C. Wheeler, March 12th, 1861, and G. E. Chenoweth, Nov. 15th, 1859; the 5th clause in the patents of John G. Dunham, Sept. 22nd, 1859, and J. Smalley, April 12th, 1859; the 6th in the patent of F. H. Manney, April 30th, 1861, and the 7th in the patent of Osborne and Kirby, assignees of W. A. Kirby, July 2nd, 1861. The specification is returned herewith for necessary amendment.

Respectfully, &c.,

REUBEN HOFFHEINS,
(Care of Munn and Co., Washington, D. C.)

Ams. 16; 313.

36 The specification of Reuben Hoffheins' Harvester is hereby amended by inserting at the end of the fourth clause of the claim the following:

A Insert. When combined with bracing guides *h'*, substantially as herein described.

Also by erasing the fifth and sixth clauses of the statement of the nature of the invention and of the claim, and cor'ecting the ordinal of the last clause in accordance therewith.

REUBEN HOFFHEINS,
By MUNN & CO., *Attorneys.*

WASHINGTON, D. C., *Oct.* 14, 1863.

The above application is further amended by erasing the last clause in the statement of the nature of the invention; also the last clause of the claim.

MUNN AND CO.,
Att'ys for R. Hoffheins.

OCT. 16TH, 1863.

37 U. S. PATENT OFFICE, *Feb.* 24, 1864.

SIR: Application has been made to this office for a patent for an alleged improvement in harvesters, which is shown but not claimed in the patent granted to you Nov. 3, 1863. The claim of said application is in the following words, viz: "The combination in a two-wheeled, hinge-joint machine of a driver's seat mounted upon the main frame with a raking mechanism mounted upon the finger-beam, and rotating on a vertical axis, or one nearly so, substantially in the manner de-

scribed, for the purpose of enabling the driver to ride upon the machine while the rake is in operation."

If you wish to contest the question of priority of said invention, it will be necessary for you to file an application presenting said claim within two months from this date, otherwise said application will be considered without reference to your patent aforesaid.

Respectfully, &c.

REUBEN HOFFHEINS,
(Care of Munn & Co., Washington, D. C.)
Ams. 18.

WASHINGTON, D. C., *October 14th*, 1863.

Hon. D. P. HOLLOWAY,
Commissioner of Patents:

SIR: We herewith return the specification of R. Hoffheins' harvester, with an amendment erasing two of the four claims rejected by the official letter of Oct. 13th, 1863. The fourth claim we have
38 amended so as to avoid conflict with the references.

In regard to the 7th we found no answer in the patent of Kirby, referred to, the tumbling-shaft in this patent not being extensible in length while in operation, as claimed by Hoffheins, but simply a shaft provided with a sliding clutch. It resembles Hoffheins' shaft somewhat in construction and appearance, but not in its peculiar function of extending or contracting in length to compensate for variations in the relative position of the gear frame and rake, and operating the latter alike under all conditions.

The case is very respectfully submitted for further action.

Your obedient servant,

MUNN AND CO.

Memorandum of fee paid at United States Patent Office.

Inventor, Reuben Hoffheins.
Invention, harvesters.
Date of payment, Oct. 24, 1863.
Fee, $20.
Solicitor, Munn and Co.

Mr. McCormick will please put this case in issue of November 3d, to relieve the clerk, Chas. Learetts, from blame.

A. L. HAYES, *Ac'g Com'r.*

39 No. 40481. $\frac{41}{11}$

Reuben Hoffheins, of Dover, county of York, State of Pennsylvania, harvesters.

Rec'd	September	10,	1863.
Petition	"	"	"
Affidavit	"	"	"
Specifications,	"	"	"
2 drawings	"	"	"
Model	"	"	"

Cert. dep.
1 cash, $15, Sept. 10, 1863.
Add'l fee, cert.
1 " " cash, $20, Oct. 24, 1863.
Examined Chas. G. Page, Oct 17, "
2 issue, Haye, " 20, "

4 patented Nov. 3, "
Recorded vol. 155, page 181.
Circular, Oct. 20th 1863.
MUNN and Co., Present.
Spec'n ret'd, Oct. 13, 1863.
Spec'n to att'y., Oct. 15, 1863.
Ex. J. A. W. E. J.
Letter, Feb'y 24, 1864.
Reissued November 7th, 1865, and again reissued February 19th, 1867. Improvement in harvesters.

40 *Complainants' exhibit.*

Department of the Interior, United States Patent Office. To all to whom these presents shall come, greeting:

This is to certify that the models in the matter of the following patents, viz, R. Hoffheins, May 20th, 1862, ℔ 35315, reissued April 10th, 1866, No. 2224; also R. Hoffheins, November 3rd, 1863, ℔ 40481, reissued February 19th, 1867, ℔ 2490, all for "improvement in harvesters," were destroyed by the firewhich occurred in this office September 24th, 1877.

In testimony, I, Ellis Spear, Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed, this ninth day of August, in the year of our Lord one thousand eight hundred and seventy-eight, and of the Independence of the United States the one hundred and third.

[SEAL.]

ELLIS SPEAR,
Commissioner.

Filed Nov. 18, 1878.

41 *Complainants' stipulation as to burning of models.*

United States circuit court, northern district of Ohio.

R. HOFFHEINS ET AL.
vs.
C. RUSSELL ET AL.
} In chancery.

"Complainant's Exhibit, Model of Defendants' Harvesters" having been partially destroyed by fire, it is agreed by and between counsel for the respective parties that, for the purposes of this case, the model now marked "Complainants' Exhibit, Model of Defendants' Harvesters," is a correct duplicate of the correspondingly marked original model, and shall be considered as in evidence in lieu of said original, and with like effect.

It is also admitted that, as a matter of fact, the certified duplicates of Patent Office models, marked "Complainants' Exhibit, Hoffhein's Patent Office Model of Reissue No. 2224," and "Complainants' Exhibit, Hoffheins' Patent Office Model of Reissue No. 2490," were so seriously injured by the same fire as to require restoration, fragments only remaining.

GEO. HARDING,
For Def'ts.
GEO. H. CHRISTY,
For Comp'ts.

NEW YORK, *M'ch 9th*, 1878.
Filed Nov. 19th, 1878.

scribed, for the purpose of enabling the driver to ride upon the machine while the rake is in operation."

If you wish to contest the question of priority of said invention, it will be necessary for you to file an application presenting said claim within two months from this date, otherwise said application will be considered without reference to your patent aforesaid.

Respectfully, &c.

REUBEN HOFFHEINS,
(Care of Munn & Co., Washington, D. C.)
Ams. 18.

WASHINGTON, D. C., *October 14th*, 1863.

Hon. D. P. HOLLOWAY,
Commissioner of Patents:

SIR: We herewith return the specification of R. Hoffheins' harvester, with an amendment erasing two of the four claims rejected by the official letter of Oct. 13th, 1863. The fourth claim we have
38 amended so as to avoid conflict with the references.

In regard to the 7th we found no answer in the patent of Kirby, referred to, the tumbling-shaft in this patent not being extensible in length while in operation, as claimed by Hoffheins, but simply a shaft provided with a sliding clutch. It resembles Hoffheins' shaft somewhat in construction and appearance, but not in its peculiar function of extending or contracting in length to compensate for variations in the relative position of the gear frame and rake, and operating the latter ali ke under all conditions.

The case is very respectfully submitted for further action.

Your obedient servant,

MUNN AND CO.

Memorandum of fee paid at United States Patent Office.

Inventor, Reuben Hoffheins.
Invention, harvesters.
Date of payment, Oct. 24, 1863.
Fee, $20.
Solicitor, Munn and Co.

Mr. McCormick will please put this case in issue of November 3d, to relieve the clerk, Chas. Learetts, from blame.

A. L. HAYES, *Ac'g Com'r.*

39 No. 40481. $\frac{41}{11}$

Reuben Hoffheins, of Dover, county of York, State of Pennsylvania, harvesters.

Rec'd	September	10,	1863.
Petition	"	"	"
Affidavit	"	"	"
Specifications,	"	"	"
2 drawings	"	"	"
Model	"	"	"

Cert. dep.
1 cash, $15, Sept. 10, 1863.
Add'l fee, cert.
1 " " cash, $20, Oct. 24, 1863.
Examined Chas. G. Page, Oct 17, "
2 issue, Haye, " 20, "

4 patented Nov. 3, "
Recorded vol. 155, page 181.
Circular, Oct. 20th 1863.
MUNN and Co., Present.
Spec'n ret'd, Oct. 13, 1863.
Spec'n to att'y., Oct. 15, 1863.
Ex. J. A. W. E. J.
Letter, Feb'y 24, 1864.
Reissued November 7th, 1865, and again reissued February 19th, 1867. Improvement in harvesters.

40 *Complainants' exhibit.*

Department of the Interior, United States Patent Office. To all to whom these presents shall come, greeting:

This is to certify that the models in the matter of the following patents, viz, R. Hoffheins, May 20th, 1862, ℔ 35315, reissued April 10th, 1866, No. 2224; also R. Hoffheins, November 3rd, 1863, ℔ 40481, reissued February 19th, 1867, ℔ 2490, all for "improvement in harvesters," were destroyed by the firewhich occurred in this office September 24th, 1877.

In testimony, I, Ellis Spear, Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed, this ninth day of August, in the year of our Lord one thousand eight hundred and seventy-eight, and of the Independence of the United States the one hundred and third.

[SEAL.]

ELLIS SPEAR,
Commissioner.

Filed Nov. 18, 1878.

41 *Complainants' stipulation as to burning of models.*

United States circuit court, northern district of Ohio.

R. HOFFHEINS ET AL.
vs.
C. RUSSELL ET AL.
} In chancery.

"Complainant's Exhibit, Model of Defendants' Harvesters" having been partially destroyed by fire, it is agreed by and between counsel for the respective parties that, for the purposes of this case, the model now marked "Complainants' Exhibit, Model of Defendants' Harvesters," is a correct duplicate of the correspondingly marked original model, and shall be considered as in evidence in lieu of said original, and with like effect.

It is also admitted that, as a matter of fact, the certified duplicates of Patent Office models, marked "Complainants' Exhibit, Hoffhein's Patent Office Model of Reissue No. 2224," and "Complainants' Exhibit, Hoffheins' Patent Office Model of Reissue No. 2490," were so seriously injured by the same fire as to require restoration, fragments only remaining.

GEO. HARDING,
For Def'ts.
GEO. H. CHRISTY,
For Comp'ts.

NEW YORK, *M'ch 9th*, 1878.
Filed Nov. 19th, 1878.

42 *Stipulation as to models, test'y and photographs.*

It is stipulated in the above case that the model marked ++ shall be used in evidence in the trial of the case and received as a true copy of the Patent Office model of the complainants' patent No. 2224, and that the printed copy of the complainants' testimony shall be received as evidence in place of the original record of the testimony destroyed by fire.

It is also stipulated that the photographs marked X, W, Y, are duplicates of the photographs taken from what is called on the record the Shellenburger machine and may be used on the trial, now marked respectively Shueman Photograph No. 1, No. 2, No. 3.

It is also stipulated that instead of taking the machines to the hearing the models marked by counsel may answer instead.

JNO. H. B. LATROBE, *For Compts'.*
GEO. HARDING, *For Defts'.*

NOV. 6, 1875.
Filed Nov. 19th, 1878.

43 *Complainants' stipulation with defendants as to models.*

It is hereby stipulated by and between counsel for respective parties that, for the purpose of this suit, the models now marked Defendants' Exhibit, "Brown Model No. 1," "Brown Model No. 2," Brown Model No. 3," "Model Whitenaet, "Adam R. Reese Model," "Staerhouse Model," "Model Miller Straight-finger Bar," "Model Moving-bar," "Miller Machine," and "Duplicate Brown Model No. III," are correct duplicates of the correspondingly marked original models which were partially destroyed by fire, and shall be considered as in evidence in lieu of the said original models and with like effect.

GEORGE H. CHRISTY,
For Compts'.
GEORGE HARDING.

NEW YORK, *Nov.* 9, 1878.
Filed Nov. 19th, 1878.

COMPLAINANTS' EXHIBIT.

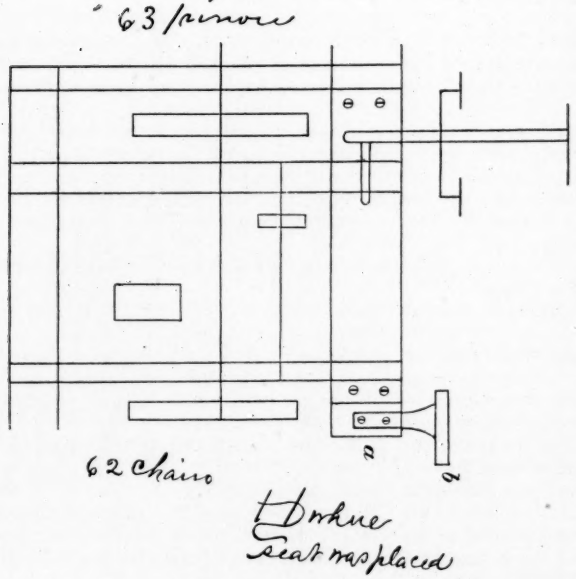

Exhibit.

FINK, G. M. S.,
Notary Public.

44 REUBEN HOFFHEINS
vs.
ADAM R. REESE.

Complainants' Exhibit Interference Decision.—GEORGE A. HECKERT, *notary public, as special examiner.*

Department of the Interior, United States Patent Office. To all persons to whom these presents shall come, greeting:

This is to certify that the annexed is a true copy from the files of this office of the decision of Chief-Justice D. K. Carter, in the matter of the interference of Reuben Hoffheim vs. Adam R. Reese, for harvester.

In testimony whereof, I, acting Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed, this day of , in the year of our Lord one thousand eight hundred and seventy-eight, and of the Independence of the United States the one hundred and second.

[SEAL.]

W. H. DOOLITTLE,
Acting Commissioner.

45 REUBEN HOFFHEIM *vs.* ADAM R. REESE. } On appeal before honorable D. K. Carter, chief justice, September 30, 1865.

Interference between the application of Reuben Hoffheim for the reissue of the patent for a harvester granted 3rd November, 1863, and the application of Adam R. Reese for a patent for a harvester.

The invention under consideration, consists of a certain combination of a driver's seat, upon the main frame of the machine, with a raking mechanism mounted upon the finger-beam, and so-constructed as to operate without interfering with the driver. Hoffheim's models and drawings show the improvements but his patent makes no claim to them.

The case is unembarrassed with any doubt or dispute as to the author of the invention.

That Hoffheim first invented the contrivance is not only prooved in the testimony but conceded in the argument.

The interfering party confessedly defeated on the issue involving priority of invention, still objects that Hoffheim is not entitled to a patent by reason of abandonment of his invention, and thus far has succeeded in his objection.

The only question, therefore, left for my determination is, whether Hoffheim, in the judgment of the law, did abandon his invention in such wise as to forfeit his right to a patent.

It is a well and wisely settled rule of judgment that abandon-
46 ment is not to be presumed, or inferred from doubtful proof.

Abandonment works forfeiture of the right to a patent. Forfeitures are not favored by the law. It follows, therefore, that the fact of abandonment should be made to appear by clear and conclusive proof.

In the first place, the case presents no evidence of an express intention on the part of Hoffheim to abandon his invention, or his right to a patent therefor; but, on the contrary, shows a pertinacious and persevering purpose to procure a patent.

Unenlightened by any proof of express purpose to abandon, we are left to the force of Hoffheim's act to show that, in fact and law, he did abandon the invention.

The facts relied upon to work forfeiture, and upon which judgment is to be predicated, are clear to the end.

That on the 5th day of July, 1861, Hoffheim had a working machine embracing the improvements in question, and made public exhibition of the same.

That he filed his original application on the 10th of September, 1863, leaving an interval of two years and two months between invention and application.

That in the summer of 1861, and more than two years before making his application, Hoffheim sold eight harvesters with the driving seat and raking apparatus attached.

That the sales in every instance were upon the condition that the machines should successfully operate; otherwise the purchasers were at liberty to return them.

47 That the raking apparatus of the eight machines thus sold, each and all, failed, and were respectively returned upon Hoffheim by their purchasers.

That the failure was not occasioned by any fault in the principle or

plan of the invention, as was afterwards and within the two years proved, but by insufficient strength in the material of which it was constructed.

The question is, "Whether the sale of these machines under the circumstances, and upon their conditions, constituted an abandonment of the invention?"

In the absence of any express intention to abandon, the applicant is entitled to the fair inference which these facts justify.

These machines were the first machines within the knowledge of the case which had been put into the field for the trial of the invention in issue. They were put there upon a conditional sale, which condition was suc'ess or failure. The inference follows, as shadow follows substance, naturally and necessarily, that the trial involved in the sale was experimental. Experiment under practical test entered into and qualified the sale by its very terms.

The invention was new and untried, to be used for the first time, which, in its very nature, was an experimental use.

It is urged that the sale passed the property beyond the control of Hoffheim, and made it subject to the election of the pur-
48 chaser to make the sale absolute. Be it so, and grant, further, that the purchaser had made the sale absolute, the experiment involved in the sale remains undisturbed, to be concluded only with success. The matter, however, is not to be judged by what might have happened, but by what did happen. The machines did not succeed; they failed; did not go into use; they broke down. The sale did not become absolute; the broken rakes were returned upon Hoffheim.

Again, it is urged that the invention did not under these trials fail, but, as after experience shows, succeeded; that it was the failure of the material used to work the principle. There would be some force in the position if the rights of the inventor in experiment were confined to the principle without including the agencies necessary to give it practical demonstration. Such is not my understanding of the law.

The inventor's right to experiment in the direction of the practical perfection of his invention, includes necessarily the right to proportion and perfect the material or machinery through which it operates; as well may the soul manifest itself without the body as physical principles without physical agencies.

Much emphasis is placed upon the fact of a sale as forfeiting the right of the invention. If the sale had been absolute and for business use after the practical test of the machine, such sale would, and ought to conclude the applicant, but the fact of sale upon success, such
49 success predicated upon experiment, in no wise carries such conclusion.

The inventor had a right in proper person to make the experiment—had a right to employ others to make it. The maxim "facit per aleam facit per *ci*," holds good in this case, and the fact that the inventor predicated a sale upon success ought not, and in my judgment does not invalidate his right.

The decision of the Commissioner is reversed, and patent ordered accordingly.

D. K. CARTER,
Chief Justice.

Ex'd C. C. W. E. A. M.

50 HOFFHEIM ET AL.
vs.
RUSSELL ET AL.

Complainants' Exhibit, 1862, *File-wrapper and Contents.*

Department of the Interior, United States Patent Office, to all persons to whom these presents shall come, greeting:

This is to certify that the annexed is a true copy from the files of this office of the file-wrapper and contents in the matter of the letters patent granted Reuben Hoffheims, dated May 20th, 1862, No. 35315, for improvement in harvesters.

In testimony whereof I, Ellis Spear, Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this twelfth day of August, in the year of our Lord one thousand eight hundred and seventy-eight, and of the Independence of the United States the one hundred and third.

[SEAL.] ELLIS SPEAR,
Commissioner.

51 *Petition.*

To the Commissioner of Patents of the United States of America:

The petition of Reuben Hoffheins, of Dover, in the county of York and State of Pennsylvania, respectfully represents that your petitioner has invented a new and useful improvement in reaping machines, which he verily believes has not been known or used prior to the invention thereof by your petitioner.

He therefore prays that letters patent of the United States of America may be granted to him therefor, vesting in him and his legal representatives the exclusive right to the same, upon the terms and conditions expressed in the act of Congress in that case made and provided, he having paid fifteen dollars into the United States Treasury and otherwise complied with the requirements of said act. And he hereby authorizes O. D. Munn, S. H. Wales, and A. E. Beach, of the firm of Munn and Co., of the cities of New York and Washington, or their accredited agents, to act as his attorneys in presenting the application, and in making all such alterations and amendments as may be required, and to sign his name to the drawings.

REUBEN HOFFHEINS.

Address: Munn and Co., Washington, D. C.

52 *Oath.*

COUNTY OF WASHINGTON,
District of Columbia, ss:

On this twenty-seventh day of February, 1862, before the subscriber, a notary public in and for the said county, personally appeared the above-named Reuben Hoffheins, and made solemn affirmation that he verily believes himself to be the original and first inventor of the within-described improvement in reaping machines, and that he does not know or believe that the same was ever before known or used, and that he is a citizen of the United States.

[SEAL.] EDM. F. BROWN,
Notary Public.

53 To all whom it may concern:

Be it known that Reuben Hoffheins, of Dover, in the county of York and State of Pennsylvania, have invented certain new and useful improvements in machines for harvesting grain; and I do hereby declare the following to be a full and exact description of the same, reference being made to the accompanying drawings, making part of this specification, in which—

Fig. 1 is a plan of a harvesting machine with my improvements.

Fig. 2 is a side elevation of the same with one wheel removed.

Fig. 3 is a rear elevation.

Similar letters of reference indicate corresponding parts in the several figures.

My said invention consists in certain improvements in the manner of mounting and operating a revolving rake, as will be hereinafter more fully explained.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operations.

A represents the main frame of the machine, and *a'* a portion of the draft pole. B is a driving-wheel, secured to the axle C, and B' a wheel running loosely on the said axle. D is a segmental platform provided with a divider, E, at its outer end resting upon a roller, *e*. F is a draw-bar connected at front by a universal joint to the frame A, and attached at back to a shoe, *f*, upon which the inner side of the platform may rest. G is a lateral brace-rod, hinged at one end beneath the right-hand rear corner of the main frame and at the
54 other to the draw-bar F or shoe *f*. H is a link by which the inner end of the platform is suspended from the back of the main frame. I is a post rigidly secured to the inner side of the platform and inclining over the rear of the main frame. I is a brace-rod extending from the draw-bar to the said post to support the latter at top. J is a box mounted on the top of the post I and constituting the bearing in

Inserted & erased May 1, 1862. disk which the rake-head K rotates. The rakes or reel-arms L L' are mounted in couples upon the ends of horizontal shafts M M,'

Inserted & erased. rotary disk which are journaled at right angles across the head K. The oblique positions of the rakes upon their shafts M M' are clearly shown in the drawings, and the manner in which they are elevated to pass over the frame, and lowered to incline the standing grain over the cutting apparatus, and remove grain from the gavels on the platform will be hereinafter explained.

C is a cog-wheel, secured to the shaft C, and gearing with a pinion, *n*, upon a secondary shaft, N, which carries also a clutch-pulley, O, fitted loosely thereon, but rotating when the machine is moving forward by means of a pin, *n*, upon the shaft taking into the notched teeth upon the face of the pulley O. *o* is a spiral spring employed to hold the pulley in contact with the pin *n*. A band, P, passes around the pulley O over the tension pulleys *p p* at the outer end of a swiveled and yielding rod, Q, and around a pulley, R, journaled in a stationary segment, S, which is attached to the top of the post I beneath the rake-head. Gearing *r* r^1 r^2 r^3 transmits motion from the pulley R to the rake-head K, rotating the latter in a horizontal plane.

The segment S is formed with two concentric ranges of cogs
55 *s* s^2 for elevating the rakes or reel-arms and two concentric ways s^2 s^3 for supporting the same. The shaft M is provided at each end with a cogged segment, *m*, taking into the cogs *s*, and the shaft M

with a cogged segment, m, taking into the cogs s. m^2 are stops upon the shafts M M' to limit their rotation. m^4 are arms which pass between guide flanges s^4. m^3 are arms which rest upon the ways s^3 to support the rakes L in their elevated position.

The cutting apparatus is not represented, and may be constructed and operated in any suitable manner.

The operation of the combined reel and rake is as follows: The rake-head K receives a continuous rotary motion from the belt P, as before explained.

As each reel-arm approaches the rear of the main frame, its cogged segment m takes into the cogs s, turning the reel-arm backward and upward completely over the frame, and causing the reel-arm which is attached in front to the same shaft M to descend at the right side of the wheel, where it operates to prevent and hold the standing grain to the action of the cutters, and so passes over the platform. By the time the last-mentioned reel-arm reaches the point to be elevated over the frame the first has advanced so far as to pass off the way s^2 and descend clear of the wheel, and so the work progresses. In like manner the rakes L operate first reel-arms, and passing backwards in contact with the platform remove therefrom all the grain that has collected and deposit it in a gavel upon the ground. On passing off the platform the rake is held and guided by its short arm m^4 passing between the flanges s^4, and its cogs m^1 are thereby presented in correct position to the cogs s^1 by means of which it is elevated, as above described, in
56 reference to the reel-arms. The elevated rake is maintained by the short arm m^3, resting upon the way s^3, until it has passed around sufficiently far to descend clear of the wheel B.

Then leaves the way S3. Interlined before filing. then leaves the way s^3

The supporting-arm m^3 ∧ and the rake is carried down by the ascent of that attached to the opposite end of the shaft M.[1]

Erased the and two inserted. two

The present illustration shows two rakes and the plain reel-arms. It is obvious that any even number of arms may be employed, and as many may be provided with teeth, as preference or the nature of the work may dictate.

Two analogous devices have been described for elevating the arms. Either of these or any other substantially equivalent device may be adopted, as I do not restrict myself to the specific means described for accomplishing this result.

It will be seen that the platform is so attached and supported as to permit it to conform with the utmost freedom to inequalities of the surface of the ground, and the standard or post I, being rigidly mounted upon the platform and inclining over the back of the main frame, supports the reel and rake in an unchangeable position in relation to the platform without obstructing the free motion of the latter in any degree.

The spring q bearing against the rear end of the rod Q, maintains the band P at an equal tension in all positions of the pulley R, and the swivel in the said rod permits the band to conform to the changing angle of the pulley as the outer end of the platform rises and falls. The reel and rake can thus operate with complete effect under all circumstances.

57 Having thus described my invention, what I claim therein as new, and desire to secure by letters-patent, is:

1st. A combined reel and rake, rotating upon a vertical axis and having its arms successively turned up into an inverted position to pass over the main frame, substantially as explained:

2nd. The inclined standard I, rigidly mounted upon a loosely hinged platform, and employed to support a revolving reel and rake in an unchangeable position in relation to the said platform without obstructing the free motion of the latter.

3rd. The yielding and swiveled rod Q, operating in combination with the band P, and pulleys O and R in the manner and for the purposes herein shown and explained.

The above specification of my improvement in reaping machines, signed this twenty-seventh day of February, 1862.

REUBEN HOFFHEINS.

Witnesses:
OCTAVIUS KNIGHT,
JAMES H. GRIDLEY.

58 UNITED STATES PATENT OFFICE,
April 2nd, 1862.

SIR: In the matter of your application for letters patent for alleged improvements in reaping machines, it is found that that portion of your model which represents your invention is too frail to meet the requirements of the office. The examination is therefore necessarily postponed until a suitable model is furnished.

Respectfully, &c.,
REUBEN HOFFHEINS,
(Care of Munn and Co., Washington, D. C.)

WASHINGTON, D. C., *April 18th*, 1862.

Hon. D. C. HOLLOWAY,
Commissioner of Patents:

SIR: The model of Reuben Hoffheins' harvester having been repaired in accordance with the requirements in your letter of April 2nd, 1862, is herewith returned to the office and the case respectfully submitted for examination.

Very respectfully, your obedient servant,
MUNN AND CO.

UNITED STATES PATENT OFFICE,
April 21, 1862.

SIR: The specification and their drawing of your application for letters patent for alleged improvements in reaping machines are returned to you herewith for amendment in the particulars noted in pencil on the former as defective.

59 Respectfully, &c.,
REUBEN HOFFHEINS,
(Care of Munn and Co., Washington, D. C.)

A. M. S. 16.

The specification of Reuben Hoffheins's imporvement in
Inserted. harvesters is hereby amended by substituting "disk" for "rake head" in lines 13 and 14 of page 2.
Inserted. Also by substituting "rotating disk" for "head" in line 16 of page 2.
Inserted. Also by substituting "two" for "the" in line 2 of page 5.

REUBEN HOFFHEINS,
By MUNN & CO.,
Attorneys.

WASHINGTON, D. C., *April 30th*, 1862.

with a cogged segment, *m*, taking into the cogs *s*. m^2 are stops upon the shafts M M' to limit their rotation. m^4 are arms which pass between guide flanges s^4. m^3 are arms which rest upon the ways s^3 to support the rakes L in their elevated position.

The cutting apparatus is not represented, and may be constructed and operated in any suitable manner.

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56 reference to the reel-arms. The elevated rake is maintained by the short arm m^3, resting upon the way s^3, until it has passed around sufficiently far to descend clear of the wheel B.

Then leaves the way S3. Interlined before filing. then leaves the way s^3

The supporting-arm m^3 ∧ and the rake is carried down by the ascent of that attached to the opposite end of the shaft M.[1]

Erased the and two inserted. two

The present illustration shows two rakes and the plain reel-arms. It is obvious that any even number of arms may be employed, and as many may be provided with teeth, as preference or the nature of the work may dictate.

Two analogous devices have been described for elevating the arms. Either of these or any other substantially equivalent device may be adopted, as I do not restrict myself to the specific means described for accomplishing this result.

It will be seen that the platform is so attached and supported as to permit it to conform with the utmost freedom to inequalities of the surface of the ground, and the standard or post I, being rigidly mounted upon the platform and inclining over the back of the main frame, supports the reel and rake in an unchangeable position in relation to the platform without obstructing the free motion of the latter in any degree.

The spring *q* bearing against the rear end of the rod Q, maintains the band P at an equal tension in all positions of the pulley R, and the swivel in the said rod permits the band to conform to the changing angle of the pulley as the outer end of the platform rises and falls. The reel and rake can thus operate with complete effect under all circumstances.

57 Having thus described my invention, what I claim therein as new, and desire to secure by letters patent, is:

1st. A combined reel and rake, rotating upon a vertical axis and having its arms successively turned up into an inverted position to pass over the main frame, substantially as explained:

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3rd. The yielding and swiveled rod Q, operating in combination with the band P, and pulleys O and R in the manner and for the purposes herein shown and explained.

The above specification of my improvement in reaping machines, signed this twenty-seventh day of February, 1862.

REUBEN HOFFHEINS.

Witnesses:
OCTAVIUS KNIGHT,
JAMES H. GRIDLEY.

58 UNITED STATES PATENT OFFICE,
April 2nd, 1862.

SIR: In the matter of your application for letters patent for alleged improvements in reaping machines, it is found that that portion of your model which represents your invention is too frail to meet the requirements of the office. The examination is therefore necessarily postponed until a suitable model is furnished.

Respectfully, &c.,
REUBEN HOFFHEINS,
(Care of Munn and Co., Washington, D. C.)

WASHINGTON, D. C., *April 18th*, 1862.

Hon. D. C. HOLLOWAY,
Commissioner of Patents:

SIR: The model of Reuben Hoffheins' harvester having been repaired in accordance with the requirements in your letter of April 2nd, 1862, is herewith returned to the office and the case respectfully submitted for examination.

Very respectfully, your obedient servant,
MUNN AND CO.

UNITED STATES PATENT OFFICE,
April 21, 1862.

SIR: The specification and their drawing of your application for letters patent for alleged improvements in reaping machines are returned to you herewith for amendment in the particulars noted in pencil on the former as defective.

59 Respectfully, &c.,
REUBEN HOFFHEINS,
(Care of Munn and Co., Washington, D. C.)
A. M. S. 16.

The specification of Reuben Hoffheins's imporvement in
Inserted. harvesters is hereby amended by substituting "disk" for
"rake head" in lines 13 and 14 of page 2.
Inserted. Also by substituting "rotating disk" for "head" in line
16 of page 2.
Inserted. Also by substituting "two" for "the" in line 2 of page 5.

REUBEN HOFFHEINS,
By MUNN & CO.,
Attorneys.

WASHINGTON, D. C., *April 30th*, 1862.

UNITED STATES PATENT OFFICE,
Washington, June 12th, 1863.

SIR: You are hereby notified that Adam R. Reese has made application for a patent for alleged improvement in rakes for harvesters which is believed to interfere with a patent granted to you on the 20th day of May, 1862, for improvement in harvesters. Said Reese, through his attorney, Wm. D. Baldwin, esq., of Washington, D. C., has been notified thereof. A hearing will be granted to the parties on the second Monday in August next.

60 The testimony must be closed on the Monday preceding the day of hearing. The arguments of counsel must be filed in the office on the day of hearing. Further time for filing arguments can only be granted on application of counsel, sustained by sufficient affidavits in conformity with the provisions of the act of July 4th, 1836. The testimony must be in conformity with the enclosed rules, under the oath or affirmation of persons who are not interested in the question at issue.

The main thing to be proved is the date, nature, and extent of the invention made by you.

Yours, respectfully,

Commissioner.

REUBEN HOFFHEINS,
(Care Munn and Co., Washington, D. C.)

UNITED STATES PATENT OFFICE,
July 25th, 1863.

SIR: At the request of counsel for A. R. Reese, party to an application for a patent for improvement in rakes for harvesters adjudged to interfere with the patent granted to R. Hoffheins, May 20th, 1862, and sufficient cause being shown, the day of hearing of said interference is hereby postponed to the 3rd Monday in September next.

Respectfully, &c.

R. HOFFHEINS,
(Care of Munn & Co., Washington, D. C.)
A. M. S. 16.

61 U. S. PATENT OFFICE, *Sept. 9th*, 1863.

SIR: The hearing in the case of your interference with Adam R. Reese, has been postponed at your request to the 3rd Monday in October next.

REUBEN HOFFHEINS,
(Care Munn & Co., present.)
C. G. P., 16.

UNITED STATES PATENT OFFICE,
Oct. 12th, 1863.

SIR: The interference between the application of A. R. Reese and patent of R. Hoffheins for improvement in harvesters, the hearing of which was appointed for 3rd Monday in October, 1863, is hereby dissolved at the request of said Reese, he having withdrawn all claim to the features in interference.

Respectfully, &c.

R. HOFFHEINS,
(Care of Munn & Co., Washington, D. C.)
A. M. S., 16.

WASHINGTON, D. C., *Oct. 19th*, 1863.

Hon. D. P. HOLLOWAY,
Commissioner of Patents:

SIR: We herewith return the original patent of Reuben Hoffheins' improvement in harvesters, and respectfully request that the examination of his reissue application may be proceeded with.

Your obedient servant,

MUNN & CO.

62 R. Hoffheins, May 9th, '62, $20. Harvester rake.
No. 35315. Page * * * 15

4

Reuben Hoffheins, of Dover, county of York, State of Pennsylvania. Reaping machines.

Rec'd	March	28th,	1862.
Petition,	"	"	"
Affidavit,	"	"	"
Specification,	"	"	"
2 drawings,	"	"	"
Model,	"	"	"
Cert. dep.			
1 cash, $15,	"	"	"
1 ad'l fee, cash $20,	May	9th,	"
Examined, Chas. G. Page,	"	2nd,	"
Issue, Hayes,	"	3rd,	"
4 patented,	"	20th,	"

Recorded, vol. 140, page 233.
Circular, May 3, '62.
MUNN & CO., present.

R. 2.
Letter, April 2nd, 1862.
Spec. and 1 dr'g ret'd April 21, 1862.
Interference with the application of A. R. Reese, declared June 12, 1863. Hearing 2nd Monday in August, 1863. Hearing post-
63 poned to 3rd Monday in September, 1863. (See letter July 25, 1863.) Hearing postponed to 3rd Monday in October, 1863, September 19th, 1863.
Interference dissolved October 12th, 1863.
Ex'd H. M. H. M. M. K.

64 *Decree.*

In the circuit court of the United States for the northern district of Ohio. In equity.

REUBEN HOFFHEINS, JAMES A. SAXTON, AND George W. Crouse
vs.
C. RUSSELL AND COMPANY AND CLEMENT Russell, William K. Miller, and James S. Tonner.

And now, to wit, on this 28th day of November, A. D. 1878, this

cause came on to be heard on bill, answer, and proofs, and, being argued by counsel for the respective parties, it is adjudged that the defendants do not infringe any invention of which the complainant Reuben Hoffheins was the original and first inventor, recited in the reissued letters patent of the said Reuben Hoffheins, numbered 2224 and 2490 respectively, and that the said reissued letters patent No. 2224 contains inventions different from that contained in the original letters patent No. 35315, of which it purports to be a reissue, and that the reissued patent No. 2490 contains inventions different from that embrased in the original letters patent No. 40481, of which it purports to be a reissue, and that the said reissued letters patent No. 2224 and 2490 respectively are therefore void. And it is further ordered and decreed that the bill of complaint be dismissed with costs.

JOHN BAXTER, *Judge*, &c.

Filed Nov. 28, 1878.

65 And afterwards, to wit, on the 28th day of November, A. D. 1878, at Cleveland, Ohio, being a day in the October term of said court, the complainant in open court prayed an appeal in this cause to the next term of the Supreme Court of the United States, which appeal was allowed and bonds fixed at the sum of one thousand dollars.

66 *Stipulation as to appeal.*

In the circuit court of the United States for the northern district of Ohio.

REUBEN HOFFHEINS & OTHERS *vs.* C. RUSSELL & CO. AND OTHERS. } In equity.

It is agreed by counsel in the above case that the *that the* decree passed thereon on the day of November, 1878, shall be taken as the decree rendered at October term of the said court, and that the clerk shall enter therein an appeal as prayed for and allowed in open court.

JNO. H. B. LATROBE,
GEO. H. CRISTY,
For Comp'ts.
GEORGE HARDING,
For Def'ts.

Filed Nov. 21, 1878.

67 (Copy.)

Know all men by these presents that we, Reuben Hoffheins, as principal, and Phineas Palmer and William Lenhart, as sureties, are held and firmly bound unto C. Russell & Co., Clement Russell, William K. Miller, and James S. Tonner, in the sum of one thousand dollars, to the payment whereof, well and truly to be made, we bind ourselves, our heirs, executors, and administrators, jointly and severally, firmly by these presents. Sealed with our seals, and dated this 25th day of January, in the year of our Lord one thousand eight hundred and seventy-nine.

Whereas the above bounden Reuben Hoffheins has appealed to the next Supreme Court of the United States, from a decree of the circuit court of the United States for the northern district of Ohio, bearing

date the 28th day of November, A. D. 1878, in a cause wherein the said Reuben Hoffheins, James A. Saxton, and George W. Crouse were complainants, and the said C. Russell and Company, Clement Russell, William K. Miller, and James S. Tonner were respondents.

Now, therefore, the condition of this obligation is such that, if the above-named appellant, Reuben Hoffheins, shall prosecute his appeal with effect, and pay all such damages, costs, and expenses as shall be awarded against him as such appellant therein, then this obligation to be void; otherwise to remain in full force and effect.

Sealed and delivered in presence of—

REUBEN HOFFHEINS. [SEAL.]
PHINEAS PALMER. [SEAL.]
WILLIAM LENHART. [SEAL.]

Taken and acknowedged before me this 25th day of January, 1879.
[SEAL.] S. B. HEEGES, *Proth'y.*

68 (Indorsed:) No. 2719. In the circuit court of the United States for the northern district of Ohio. Reuben Hoffheins vs. C. Russell & Co. Appeal bond. Approved and filed Jan'y 28th, 1879. M. Welker, dist. judge.

69 UNITED STATES OF AMERICA,
Northern District of Ohio, Eastern Division, ss:

I, Augustus J. Ricks, clerk of the United States circuit court, northern district of Ohio, do hereby certify the above and foregoing to be a true, correct, and complete transcript of the record of all the proceedings had in said court in the cause wherein Reuben Hoffheins, James A. Saxton, and George W. Crouse are complainants, and C. Russell & Co., Clement Russell, William K. Miller, and James S. Tonner are defendants, as the same appears from the files and records of said court now remaining in my custody.

In testimony whereof I have hereunto affixed my official signature and the seal of said court, at my office, in the city of Cleveland, in said district, on this tenth day of October, one thousand eight hundred and seventy-nine, and of the Independence of the United States the 104th year.

[SEAL.] AUGUSTUS J. RICKS, *Clerk.*

70 United States circuit court, northern district of Ohio.

REUBEN HOFFHEINS ET AL. }
vs. } In equity.
C. RUSSELL & CO. ET AL. }

COMPLAINANTS' RECORD.

Bowman, Pringle & Scott, solicitors for complainants; George H. Christy, J. H. B. Latrobe, of counsel.

71 United States circuit court, northern district of Ohio.

REUBEN HOFFHEINS ET AL. }
vs. }
C. RUSSELL & CO. ET AL. }

Proofs for final hearing taken on the part of the complainants in this cause, under and pursuant to the 67th rule in equity, before Joseph Gutman, jr., examiner.

NEW YORK, *January* 13, 1876—10 a. m.

Present, S. A. Bowman, esq., counsel for complainants; George

Harding, counsel for defendants, and William K. Miller, one of the defendants.

Complainants' counsel put in evidence certified copy of reissued letters patent granted Reuben Hoffheins for improvement in harvesters, dated April 10, 1866, and numbered 2224, and marked "Complainants' Exhibit Hoffheins' Reissue No. 2224. J. Gutman, jr., examiner."

Also certified copy of reissued letters patent granted Reuben Hoffheins for improvement in harvesters, dated February 19, 1867, and No. 2490, marked "Complainants' Exhibit Hoffheins' Reissue No. 2490. J. Gutman, jr., examiner."

Also certified copies of assignment.

Also certified duplicates of the Patent Office model filed in the Patent Office, in the matter of letters patent granted Reuben Hoffheins May 20, 1864, No. 35315, for improvements in harvesters, of which last-named patent Complainant's Exhibit Hoffheins' Reissue No.
72 2224 is a reissue, marked "Complainants' Exhibit Hoffheins' Patent Office Model of Reissue No. 2224. J. Gutman, jr., examiner."

Also certified duplicate of the Patent Office model, filed in the Patent Office in the matter of letters patent granted to Reuben Hoffheins November 3, 1863, No. 40481, for improvement in harvesters, of which last-named patent Complainants' Exhibit Hoffheins' Reissue No. 2490 is a reissue, marked "Complainants' Exhibit Hoffheins' Patent Office Model of Reissue No. 2490. J. Gutman, jr., examiner."

Complainants also put in evidence a combined reaping and mowing machine, marked "Complainants' Exhibit Defendant's Harvester. J. Gutman, jr., examiner." Which combined reaping and mowing machine marked "Complainants' Exhibit Defendants' Harvester" the defendants admit was made and sold by them in the northern district of Ohio in the year 1873.

Defendants' counsel reserves the privilege of entering at any future time before the cross-examination of E. S. Renwick general or special objections to each or any of the exhibits hereinbefore offered by complainants.

Complainants' counsel insists that any such exceptions be entered before the close of the present examination and before the close of the cross-examination of Mr. E. S. Renwick.

EDWARD S. RENWICK, a witness of lawful age, produced on the part of the complainants, having been by me first duly cautioned and sworn to testify the truth, the whole truth, and nothing but the truth in the matter of controversy herein, and being examined by Mr. Bowman, says:

Question 1. What is your name, age, residence, and occupation, and what opportunities have you had for becoming acquainted with machinery generally, and particularly with reaping and mowing machines?

Answer. My name is Edward S. Renwick. I am 53 years of age I reside at Milburn, New Jersey, my place of business being in the city of New York.

I am occupied principally as expert in the trials of patent causes and
73 in soliciting patents. I am, by profession, a civil and mechanical engineer, having commenced that profession in the year 1839. For about ten years of my life I was engaged principally in the construction of machinery and in the superintendence of machinery in motion; for the greater part of the last 27 years I have been engaged almost exclusively in my present occupation. During this period I have had to make a great number of examinations in the history of the use-

ful arts as set forth in books and in patents, both American and foreign, for the purpose of ascertaining whether machines and processes described in patents were new or old. I have had to make myself familiar with the construction and operation of a great number of machines for performing many different operations. I have had to experiment with and operate machines of many different descriptions, and also to compare them for the purpose of ascertaining their similarities and differences. For many years past I have been called upon to testify every year as expert in a great number of patents causes in the United States courts. I have had to make myself acquainted with the construction and operation of many reaping and mowing machines; also to prepare applications for patents for such machines, and I have been called upon to testify as expert in a number of patent causes, in which the construction and operation of such machines was the subject matter of the controversy.

Q. 2. Have you read and do you understand the contents of the two reissued letters patent in evidence in this cause, marked respectively, "Complainants' Exhibit Hoffheins' Reissue No. 2224, and Hoffheins' Reissue No. 2490?"

A. I have read certified Patent Office copies of the two exhibits referred to in this question. I believe that I understand the contents of each of the same, and the construction and operation of the machines described therein.

Q. 3. Please examine the two models now shown you, marked respectively, "Complainants' Exhibit, Hoffheins' Patent Office Model of Reissue No. 2224, and Hoffheins' Patent Office Model of Reissue No. 2490," and state what each of them represents.

A. I have examined the two exhibits referred to in the question.
74 I find that the Hoffheins Patent Office model of reissue No. 2224 is a substantial representation of the principal parts of the machine represented and described in reissued patent No. 2224, with the exception of the cutting apparatus and the mechanism for imparting motion to it from the driving wheels, which parts are not represented in the model. I find that the Exhibit Hoffheins' Patent Office Model of reissue No. 2490 is a substantial representation of the machine described and represented in Exhibit Hoffheins' Reissue No. 2490.

Q. 4. Have you examined the combined reaping and mowing machine in evidence in this cause, marked "Complainants' Exhibit, Defendants' Harvester," and do you understand the construction and operation of that machine?

A. I have examined the exhibit referred to in this question, and believe that I understand its construction and operation.

Q. 5. Please look at the Hoffheins patent, Complainants' Exhibit Hoffheins' Reissue No. 2224, and state how the structure therein described and shown and more particularly specified in the first claim of that patent, compares with or differs from the combined reaping and mowing machine marked "Complainants' Exhibit, Defendants' Harvester," in their principle of construction and mode of operation, and give your reasons for any opinion you may express.

A. Upon making the comparison requested in the question, I find that the Complainants' Exhibit, Defendants' Harvester, embodies in substance the same combination of mechanical devices as is recited in the first claim of the Exhibit Hoffheins' Reissue No. 2224, and has the same mode of operation. My reasons for this opinion are as follows, viz, the combination recited in the said first claim is composed of the following members or mechanical devices, viz:

First. A sweep rake, which is a rake constructed to revolve round an axis in such manner that the rake-teeth sweep in circular course over a platform which supports the grain to be raked, the rake delivering the grain end-foremost at one side of the platform, so that it is out of the track pursued by the horses when cutting the next succeeding swath.

75 Second. The platform of the harvester upon which the grain falls as it is cut, and by which it is supported until it is raked off of the same and delivered from the machine.

Third. The finger-beam which is located at the front edge of the platform of a harvester, and is employed to sustain the guard fingers which enter the standing grain and hold it for the operation of the blades of the cutting apparatus.

Fourth. The cutting apparatus consisting of the guard fingers and cutter-bar with its blades, the said cutting apparatus operating to sever the stalks of grain in advance of the raking platform, as the machine is drawn against the standing grain.

Fifth. The draught-frame to which the horses are hitched by means of which the machine is drawn forward.

Sixth. The hinge-joint connection by means of which the finger-beam and platform are connected with the draught-frame with the capacity of the finger-beam to rise and descend either at its outer end or at both ends relatively of the draught frames, without disturbing its connection therewith. This hinged-joint connection is characterized by having the axis of its joint pivot or the axis of its joint pivots, substantially at right angles with the length of the finger-beam, in order that the finger-beam may operate as above stated.

The said combination, as I understand the patent, is not every combination of the said members, but is that combination of them which is characterized by the peculiarity that the sweep rake is mounted upon the heel or inner end of the finger-beam, or upon the inner front corner of the platform, so that the rakes of the sweep rake may enter the grain in advance of the finger-beam, and act as what are commonly called reel-ribs, to bear the grain in a backward direction to the finger-beam and cutting apparatus, and to lay the cut grain upon the platform as well as to sweep the grain in circular curves over the platform, and deliver it at the inner side thereof. The said combination operates to permit the sweep rake to perform the several duties above mentioned, notwithstanding the rising or falling movement of the finger-beam and platform on the joint or joints by which the finger-beam is con-

76 nected with the draught frame, and at the same time maintains the sweep rake constantly in the same relation or position to the finger-beam and platform with which it co-operates.

Now I find that the said machine, Exhibit Defendants' Harvester, contains mechanical devices which correspond substantially with the six devices above mentioned by me, and are combined together substantially in the same way and with the same mode of operation; thus in the said machine, the sweep rake corresponding with the first device mentioned by me as a member of the said patented combination is the raking device having four raking arms with teeth which are constructed to revol'e round an upright axis in such manner that the rake teeth sweep in circular curves over a platform.

Second. The platform of the said machine corresponding with that of the said patented combination, is the quadrant, formed platform over which the rake teeth sweep.

Third. The finger-beam of the said machine corresponding with that

of the said patented combination, is the beam or bar at the front edge of the platform, which beam sustains the fingers and cutter-bar with its blades.

Fifth. The draught frame of the said machine corresponding with that of the said patented combination, is the frame supported on two running wheels and fitted with a tongue or pole and its appurtenances, so that the horses may be hitched to it to draw the machine forward.

Sixth. The hinge-joint connection of the said machine corresponding with that of said patented combination, is the iron bar by which the heel or inner end of the finger-beam is connected with the draught f'ame; the said hinge-joint connection corresponding with that represented in the drawings of the patent No. 2224, and designated therein by the letter I, and having the axis of its joint pivoted at right angles with the length of the finger-beam.

The said mechanical devices in the said machine, Exhibit Defendants' Harvester, are combined together substantially in the same manner as those represented and described in the said patent No. 2224, as above stated by me. The former have the same relative positions in
77 the combination of which they form part as the latter. They operate in the same manner, and the combination has the same characteristics and mode of operation of the combination recited in the first claim of said patent as above stated by me.

In making the foregoing statement, I have taken into consideration the fact that there are some minor peculiarities of construction in which the members of the machine, Exhibit Defendants' Harvester, when considered separately, differ from those represented in the drawings of Exhibit Reissued Patent No. 2224, but I do not consider these minor differences material, because they do not change substantially, the mode of operation of the members relatively to each other, or the mode of operation of the combination formed by them; and because, further, I do not find that the combination recited in the first claim of the patent is restricted to the minor peculiarities of the members of which it is composed.

Q. 6. Look at the patent marked "Complainants' Exhibit, Hoffheins' Reissue No. 2224," and state how the combined reaping and mowing machine ma'ked "Complainants' Exhibit, Defendants' Harvester," compares with or differs from in principle of construction and mode of operation, the structure described and shown in that patent, and more particularly specified in the eighth claim thereof, and give your reasons for any opinion you may express.

A. Upon making the comparison required by the question, I find that the Exhibit Defendants' Harvester, contains in substance the same combination of mechanical devices as is recited in the eighth claim of the Hoffheins' reissue No. 2224, and has the same mode of operation. My reason for this opinion are as follows: As I understand the said reissue, the combination recited in the eighth claim thereof is composed of the following mechanical devices, viz:

First. A cutting apparatus, which, as stated in the patent, may be constructed and operated in any known and suitable way, and which is universally composed of guard-fingers and a series of blades attached to a cutter-bar; the said blades operating upon the stalks of grain which are supported by the guard-fingers.

78 Second. The main frame of the machine to which the horses are attached.

Third. The hinge-joint connection which connects the heel or inner

end of the cutting apparatus with the main frame in such a manner as to allow the cutting apparatus to conform at both ends to the undulations of the ground; this hinge-joint connection being a link or bar, which is connected by a joint at one end with the cutting apparatus and by a joint at the other end with the main frame, and having the pivots of both joints substantially at right angles with the length of the cutting apparatus, so that the latter may operate as above stated.

Fourth. The platform which is behind the cutting apparatus and is the same platform which I have referred to when speaking of the combination of the first claim.

Fifth. The rake, which is the same rake that I have spoken of when speaking of the mechanism recited in the first claim of the patent.

Sixth. The inner drive-wheel of the main or draught frame, being that one of the two drive-wheels which is nearest the cutting apparatus of the machine.

Seventh. The means of suspending the inner end of the cutting apparatus and platform from the draught frame of the machine; such means consisting of the bracket or arm extending from the inner end of the cutting apparatus toward the central longitudinal line of the draught frame of a hook or its equivalent on the draught frame, and of a chain by means of which the end of the said bracket or arm is connected with the hook upon the main or draught frame.

Eighth. The outer divider, which is *the* wedge formed, a pointed instrument at the outer end of the cutting apparatus, and which in the operation of the machine divides the grain to be cut by the cutting apparatus from that which is to be left standing.

The combination of the said devices, as I understand the patent, is not every combination of them, but is that combination which is characterized by the peculiarity that the support of the rake, commonly called the rake-post or rake-standard, occupies a position outside of the inner drive-wheel or a position which is between the suspension
79 hook of the main frame and the outer divider, or that it may be suspended below the draught or main frame.

The operation of the said combination is, that the rake maintains always the same position relatively to the cutting apparatus and platform, while its teeth sweep over the latter in circular curves, bearing back the grain to be cut by the cutting apparatus, laying it upon the platform and delivering it at one side thereof, while the cutting apparatus and platform can rise and descend at both ends to conform to the undulations of the ground; and that the cutting apparatus, platform, and rake, are suspended from the main frame so that they cannot descend at the inner end of the cutting apparatus below a certain fixed limit, while the weight of the rake and its appurtenances is applied between the point of suspension from the main or draught frame and the outer divider.

Now, I find that the machine, Exhibit Defendants' Harvester, contains devices which correspond with those above stated by me, as constituting the patented combination of the eighth claim, are combined together in the same manner, and have the same mode of operation; thus the cutting apparatus in said machine, corresponding with the cutting apparatus first above-mentioned by me, is the cutting apparatus composed of guard-fingers and a series of blades attached to a cutter-bar. This cutting apparatus is connected with a finger-beam which connects and combines it with the other members of the machine.

Second. The main frame of the said machine corresponding with that of the combination of the said 8th claim, is the frame supported on two

running wheels and fitted with a tongue and its appurtenances so that horses may be attached to it.

Third. The hinge-joint connection of the said machine corresponding with that of the said claim, is the iron link or bar which connects the inner end of the cutting apparatus with the main frame, and has all the peculiarities of the hinge-joint connection of the said combination.

Fourth. The platform of the said machine corresponding with
80 that of the said patented combination, is the quadrant-formed platform before referred to by me.

Fifth. The rake of said machine, corresponding with that of the said patented combination, is the same raking device which I have mentioned when speaking of the correspondence of the said machine with the combination of the first claim of the patent.

Sixth. The inner drive-wheel of the machine corresponding with that of the said first claim is, that one of the two which is at the right hand of a person sitting upon the driver's seat of the machine, and is the one which is nearest the cutting machine.

Seventh. The means of suspending the inner end of the cutting apparatus and platform from the shaft frame of the said machine corresponding with the means referred to in the said claim, consist of the iron arm which extends from the inner end of the cutting apparatus in a left-hand direction towards the central longitudinal line of the draught frame of the hook, which projects at the rear of the draught frame, and of the chain which connects the end of said arm with the hook.

Eighth. The outer divider of the said machine corresponding with that of the said patented combination, is the wedge-formed or pointed instrument at the outer or right-hand end of the cutting apparatus, which instrument has the same operation in the machine as that of the said patented combination.

I further find that the said devices in the said machine have the same relative positions as those of the said patented combination, are combined together in substantially the same way, and are characterized by the same peculiarities; the support of the rake among other things occupying a position which is between the suspension hook of the main frame and the outer divider, and that it is suspended below the draught frame. The combination, as a whole, also has the same mode of operation as above stated by me.

Q. 7. Look at the patent marked, "Complainants' Exhibit, Hoffheins' Reissue No. 2224," and state how the combined reaping and mowing machine, marked, "Complainants' Exhibit, Defendants'
81 Harvester," compares with or differs from, in principle of construction and mode of operation, the structure described and shown in that patent, and more particularly specified in the ninth claim thereof, and give your reasons for any opinion you may express.

A. Upon making the comparison required by this question, I find that the Complainants' Exhibit, Defendants' Harvester, embodies in substance the same combination of mechanical devices as is recited in the ninth claim of the Exhibit Hoffheins' Reissue, and has the same mode of operation. My reasons for this opinion are as follows: The combination recited in the said ninth claim, as I understand the said patent, is composed of the following devices, viz:

First. The finger-beam, which is the same device as is mentioned by me when speaking of the first claim of the said reissue.

Second. The platform, which is the same platform as is mentioned by me when speaking of the first claim of the said reissue.

Third. The main frame, to which the horses are attached, being the same main frame before referred to by me.

Fourth. The rake and reel, which is the raking device referred to by me when speaking of the first claim of said reissued patent, whose arms operate as reel-ribs to press the grain towards the cutting apparatus, lay it upon the platform, and deliver it at one side thereof.

Fifth. The hinged draw-bar, which is a bar extending from the front of the main frame backwards toward the finger-beam and platform, and hinged at its front end to the main frame, so that the finger-beam and platform may be drawn forward through the intervention of the said draw-bar with the capacity to rise and descend relative to the main frame.

Sixth. The hinged brace, which is the link or hinged-joint connection, mentioned by me when speaking of the combination of the eighth claim of said reissue.

Seventh. The device termed in the claim the hinged suspender, which is a link or chain loosely connected or jointed at its lower end to an arm or its equivalent, projecting from the heel or inner end of the finger-beam.

82 Eighth. The bracket or arm which projects from the heel or inner end of the finger-beam.

The said combination, as I understand the patent, is not every combination of the said members, but is that combination of them which is characterized by the peculiarity that the rake and reel are located upon the heel or inner end of the finger-beam, or upon the front inner corner of the platform.

The operation of this combination is that the rake and reel operates to enter the standing grain in advance of the cutting apparatus, bears that grain backward towards the finger-beam, lays the grain upon the platform, sweeps over the platform in circular curves, and delivers the grain at the side thereof, while the finger-beam and platform with the rake and reel, maintain their same relative positions, and are enabled to rise or descend at either end to conform to the irregularities of the surface of the ground, and are drawn forward through the intervention of the hinged draw-bar, and the inner end of the finger-beam. The platform and the rake are suspended from the main frame with the capacity of turning upon the lower joint of the hinged suspender as the outer end of the finger-beam and outer side of the platform rise or descend.

Now, I find that the said exhibit, Defendants' Harvester, contains devices which correspond with those above stated by me, are combined substantially in the same manner and have the same mode of operation as the said corresponding devices in said defendants' machine.

First. The finger-beam, which corresponds with that of said ninth claim, being the beam at the front side of the platform holding the fingers of the cutting apparatus.

Second. The platform in said machine, which corresponds with the platform of said ninth claim, is the quadrant form platform in the rear of the finger-beam.

Third. The main frame of said defendants' machine corresponding with that of the said ninth claim, is the frame supported on wheels and fitted with a tongue and its appurtenances to which the horses are attached.

Fourth. The rake and reel of the said defendants' machine cor-

83 responding with those of the said claim, is the raking and reeling device to which I have previously referred in my answers to preceding questions.

Fifth. The hinged draw-bar of the said defendants' machine corresponding with that of the said ninth claim is the iron bar which extends from the front of the main frame underneath the same backwards toward the finger-beam and platform, and is hinged at its front end to the main frame, so that the finger-beam and platform are drawn forward through its intervention with the capacity to rise and descend relatively to the main frame.

Sixth. The hinged brace of the said defendants' machine corresponding with the hinged brace of the said ninth claim is the iron bar or link which extends crosswise of the main frame and is connected at one end with the main frame through the intervention of a hinge joint, and is connected at its other end with the finger-beam and platform through the interventions of another hinge joint.

Seventh. The hinged suspender of the said defendants' machine corresponding with that of the said ninth claim is the chain at the rear end of the main frame, which is loosely connected or jointed at its lower end to the arm which projects from the heel or inner end of the finger-beam towards the central longitudinal line of the main frame.

Eighth. The bracket or arm of the said defendants' machine corresponding with that recited in the said ninth claim is the arm last above mentioned by me.

All the said corresponding members in the said defendants' machine have the same relative positions in the combinations of which they form part, as those of the said ninth claim, and the combination of them in the said defendants' machine is characterized by the same peculiarities of location and by the same mode of operation as that of said ninth claim.

In making the above statement, I have taken into consideration the fact that in the machine represented in the drawings of the reissued patent No. 2224 the hinged draw-bar is in one piece with the shoe in the inner end at the heel of the finger-beam, while in the said 84 defendants' machine it is welded fast to the hinged brace or link, so as to be in substantially one piece with that brace; but I do not consider this difference material so far as respects the combination of said ninth claim, because, in either construction, the draw-bar is hinged at its front end to the main frame and is the means through which the finger-beam, platform, and rake are drawn forward; and because in each case the hinged brace performs the same functions that are required of it in the combination of said ninth claim, it being connected at its opposite ends with the main frame and with the finger-beam and platform by means of hinged joints so that the finger-beam and platform can rise or descend at either end; and because, as I understand the said patent, I do not understand that the combination recited in the said ninth claim is restricted to a draw-bar formed in one piece with the shoe.

I have noticed also that there are some other minor differences in construction between the members of the machine represented in the drawings of said reissue No. 2224 and the corresponding members above stated by me as existing in the exhibit, defendants' machine.

But I do not consider these differences material in reference to the combination of the said ninth claim, because, as I understand the said patent, the said combination is not restricted to such minor peculiarities of the bar *is* when considered separately, and because such differ-

ences do not prevent the devices in the said defendants' machine from operating substantially in the same manner in the combination formed by them as the devices of the combination of the said ninth claim do.

Q. 8. Look at the patent marked "Complainants' Exhibit, Hoffheins' Reissue No. 2224," and state how the combined reaping and mowing machine marked, "Complainants' Exhibit, Defendants' Harvester," compares with or differs from, in principle of construction and mode of operation, the structure described and shown in that patent, and more particularly specified in the eleventh claim thereof, and give your reasons for any opinion you may express.

A. Upon making the comparison required by the question, I find that the said Exhibit, Defendants' Harvester, embodies in substance the same combination as is recited in the eleventh claim of the Exhibit,
85 Hoffheins' Reissue No. 2224, and has the same mode of operation. My reasons for this opinion are as follows: The combination recited in the said eleventh claim, as I understand the said reissue, is composed of the following devices, viz:

First. The draught frame to which the horses are attached.

Second. The cutting apparatus before referred to by me in this examination, the same being combined with the other instrumentalities of the machine through the intervention of the finger-beam.

Third. The hinged joint or hinge-joint connection, before referred to by me as being connected at one end by a hinge joint with the draught frame of the machine, and being connected at the other end by another hinge joint with the inner end of the cutting apparatus.

Fourth. The rake and reel which is the revolving sweep rake before referred to by me in the course of this examination.

Fifth. The suspension device, consisting of the arm projecting from the inner end of the finger-beam or cutting apparatus toward the central longitudinal line of the main frame, of the chain or link which is jointed to the end of the said arm, and of the hook or its equivalent at the rear end of the main frame to which the upper end of the said chain is applied.

The combination of the said devices, as I understand the said patent, is characterized by the peculiarity that the rake and reel enter the standing grain in advance of the cutting apparatus and bear the grain backward thereto, and the rake and reel and cutting apparatus maintain their same relative position, while the cutting apparatus rises or descends at either end to conform to the irregularities of the ground; and that the point of suspension at which the cutting apparatus with the rake and reel are suspended from the main frame is beyond the rake's support or standard toward the centre of the draught frame, so that when the cutting apparatus, with the rake and reel, is suspended from the draught frame the point upon which they turn in rising or descending is shifted from the hinged joint at the heel of the cutting apparatus towards the center of the draught frame, the result of which is that the deflection of the rake and reel moving with the cutting
86 apparatus is less abrupt or sudden than it would be if the point of suspension were not so shifted.

Now, I find upon examining the said Exhibit Defendants' Harvester that it contains devices which correspond substantially with those above mentioned by me, and which are combined substantially in the same manner, and have the same mode of operation. These devices in the said Exhibit Defendants' Harvester are;

First. The draught frame supported on two wheels and having the hinge and its appurtenances so that the horses may be attached.

Second. The cutting apparatus which consists of the fingers and cutter-bar with its blade, and which is combined with the other parts of the machine through the intervention of the finger-beam.

Third. The iron bar or link which correspond with the hinged joint referred to in the said eleventh claim, in being connected at one end by a hinge joint with the frame of the machine, and being connected at the other end by another hinge joint with the inner end of the cutting apparatus.

Fourth. The rake and reel which I have before spoken of in this examination, being the revolving sweep-rake.

Fifth. The suspension device, consisting of the arm projecting from the inner end of the finger-beam or cutting apparatus towards the central longitudinal line of the main frame of the chain or link jointed to the end of the arm, and of the hook at the rear end of the main or draught frame of the machine.

I find, moreover, that the combination of the said five devices in the defendants' harvester has the same peculiarities of construction and operation as the combination of the said eleventh claim, the description above given by me of the latter applying equally to the former.

In making the foregoing statement I have taken into consideration the fact that some of the five devices of the said defendants' harvester, when considered separately, differ from those represented in the drawing of the patent in some minor respects; but I do not consider these differences material in reference to the combination of the said eleventh claim, because they do not change in substance the operation of
87 the devices relatively to the others with which they are combined, and because, as I understand the said reissue No. 2224, the combination recited in the eleventh claim thereof is not restricted to minor peculiarities of the devices composing it.

Examination adjourned till January 14, 1876, at 10 a. m.

NEW YORK, *January 14th*—10 a. m.

Present, counsel as before.

Examination E. S. Renwick continued.

Q. 9. Look at the patent marked Complainants' Exhibit, Hoffheins' Reissue No. 2224, and state how the combined reaping and mowing machine, marked Complainants' Exhibit, Defendants' Harvester, compares or differs in principle of construction or mode of operation from the structure described and shown in that reissue, and more particularly specified in the 12th claim of said reissue No. 2224, and give your reasons for the opinion that you may express.

A. Upon making the comparison required by the question, I find that the said exhibit, defendants' machine, contains, in substance, the same combination of mechanical devices that is recited in the 12th claim of said reissue No. 2224, and has the same mode of operation. My reasons for this opinion are as follows: As I understand the said reissue, the combination recited in the said 12th claim is composed of the following devises, viz:

First. The draft-frame, which is the same draft or main frame previously referred to by me as being the one to which the horses are attached.

88 Second. The finger-beam, which, as before stated by me, is the finger-beam to which the cutting apparatus is secured.

Third. The platform upon which the grain falls when cut. This

platform is immediately behind the finger-beam, to which it is secured, and is of substantially quadrant-form, so that the grain may be delivered at its inner side, which is the side nearest the draft frame.

Fourth. The revolving rake, or rake so constructed that its arms revolve round a central axis, and that its rake teeth sweep over the platform in circular curves.

Fifth. The outer divider, which is the pointed instrument at the outer end of the finger-beam, and whose office is to divide the grain to be cut from that which is to be left standing.

Sixth. The finger-joint connection by which the platform and finger-beam are connected with the draft-frame, so as to rise and fall independently of the draft-frame, and to be thereby enabled to conform to the irregularity of the surface of the ground.

The combination as recited in the said 12th claim is not every combination of the said six devices, but is that combination of them which is characterized by the peculiarity that the revolving rake is mounted directly and wholly upon the platform or finger-beam, so as to rise and fall therewith, and also that the said rake is located or arranged between the centre of the draft-frame and the outer divider.

The mode of operation of this combination is that the rake, platform, and finger-beam, with the outer divider, all rise and fall together, independently of the draft-frame; that the said rake operates both as reel and rake, its arms entering the grain to be cut in advance of the finger-beam and platform, bearing such grain backward as has been separated by the outer divider, so as to lay that grain, when cut, upon said platform, sweeping around in circular curves to the inner side of the platform, and delivering the cut grain thereat in the track pursued by the horses, but behind them.

Now I find that the exhibit, defendants' machine, contains devices which correspond with the six above mentioned by me, and which are combined in the same way and with the same mode of operation.

89 The devices in said defendants' machine to which I refer are the following, viz:

First. The draft-frame, corresponding with the draft-frame of the said 12th claim, is the frame supported on two running axels, and fitted with the tongue and its appurtenances so that the horses may be attached to it.

Second. The finger beam in said defendants' machine, corresponding with the finger-beam of the said 12th claim, is the iron bar or beam to which the cutting apparatus is secured.

Third. The platform of the said defendants' machine, corresponding with the platform of the said 12th claim, is the quadrant-formed platform which is attached to and extends immediately behind the finger-beam.

Fourth. The revolving rake of the said defendants' machine, corresponding with revolving rake of the said 12th claim, is the revolving four-armed raking device which is secured at the heel or inner end of the finger-beam.

Fifth. The outer divider of the said defendants' machine, corresponding with the outer divider of the said 12th claim, is the pointed instrument which is placed at the outer end of the finger-beam, and projects in advance thereof, and divides the grain which is to be cut from that which is to be left standing.

Sixth. The hinge-joint connection of the said defendants' machine, corresponding with that of the said 12th claim, is the iron bar, or link, which extends transversely of the machine, and is connected with the

finger-beam through the intervention of a hinge joint, whose hinge pivot extends crosswise of the length of the finger-beam.

The said six devices in the said defendants' machine are combined together in such manner that the combination is characterized by the same peculiarities as the combination of the said 12th claim, as before stated by me; and the combination of the said six devices in the said defendants' machine has the same mode of operation as the combination of the said 12th claim, as before stated by me.

90 In making the above statement, I have taken into consideration the fact that the devices of said defendants' machine, when considered separately, differ in construction in some respects from the corresponding devices of the machines represented in the drawings of the said reissue No. 2224; but I do not consider these differences material, because they do not prevent the devices of said defendants' machine from sustaining the same relationship to each other as the devices of the said 12th claim do, nor from operating in the same manner, in the combination of which they constitute members; nor do they prevent the combination, as a whole, from operating substantially in the same manner as the combination of the said 12th claim does. And because, as I understand the said reissue, the combination recited in said 12th claim is not restricted to the minor peculiarities of construction of the members of which it is composed.

Q. 10. Please compare the combined reaping and mowing machine, Complainants' Exhibit, Defendants' Harvester, with the structure described and shown in Hoffheins' reissue No. 2224, and more particularly specified in the 14th claim of that patent, and state whether or not you find the structure specified in said 14th claim in the said Exhibit, Defendants' Harvester, and give your reasons for any opinion you express.

A. Upon making a comparison required by the question, I find that the machine, defendants' harvester, contains in substance the same combination of devices as is recited in the said 14th claim of reissue No. 2224. My reasons for this opinion are as follows: The combination recited in the said 14th claim, as I understand the same, is composed of the following devices, namely:

First. The main or draft frame, from which the cutting apparatus can be suspended, and with which the cutting apparatus is connected by means of a hinge-joint.

Second. The cutting apparatus of the machine, which may be constructed and operated in any known and suitable way, and which generally consists of a series of guard-fingers secured to the finger-beam of the machine, and of a series of cutter-blades, which are secured
91 to, and caused to reciprocate through, the slats of the fingers with a reciprocating cutter-bar.

Third. The hinge-joint connection by which the cutting apparatus is connected with the main frame, and which has its hinge-pivot at the inner end of the cutting apparatus, crosswise of the length thereof.

Fourth. The suspension chain, or link, by means of which the cutting apparatus can be suspended at its inner end from the main frame.

Fifth. The finger-beam to which the cutting apparatus is secured, and which, with the cutting apparatus, is hinged or connected with the main frame by the hinge-joint connection.

Sixth. The platform in the rear of the finger-beam of the cutting apparatus, which platform receives the cut grain, and is of quadrant-form, so that the grain may be moved round upon it in curves and delivered at its inner side.

Seventh. The combined rake and reel, which is the raking device before referred to by me, having its arms constructed to revolve around a central axis, so that they may enter the standing grain in advance of the cutting apparatus and finger-beam, and may operate as reel-ribs to bear the grain backward to the cutting apparatus, and to lay it upon the platform; and, also, that they may act as rakes to move the grain around in circular curves to the inner side of the platform, and to deliver it thereat.

The said combination is not every combination of the said seven devices, but is that combination of them in which the combined rake and reel is mounted directly and wholly upon the platform or finger-beam, which are at the same time suspended from the main frame and hinged thereto, so that they may rise or descend to conform to the irregularities of the surface of the ground.

Now, I find that the said exhibit, defendants' harvester, has seven devices, which correspond substantially with those of the said 14th claim, and are combined together in the same way. The devices in the said defendants' harvester, to which I refer, are the following:

First. The main or draft frame corresponding with that of the said 14th claim, is the frame supported on wheels, and fitted with a
92 tongue. This frame has the cutting apparatus suspended from it by a chain, and connected with it by a hinge-joint connection.

Second. The cutting apparatus of the defendants' harvester, corresponding with that of said 14th claim, is the one before referred to by me as composed of the guard-fingers and the cutter-blades secured to the cutter-bar.

Third. The hinge-joint connection corresponding with that of said 14th claim is the hinge-joint connection in the said exhibit, defendants' harvester, which connects the cutting apparatus with the main frame, and has its hinge-pivot crosswise of the length of the cutting apparatus.

Fourth. The suspension chain of the said defendants' harvester corresponding with that of said 14th claim, is the chain at the rear of the main frame, by means of which the cutting apparatus is suspended at its inner end from the main frame.

Fifth. The finger-beam of the said defendants' harvester corresponding with that of the said 14th claim, is the iron finger-beam to which the cutting apparatus is secured, and which, with the cutting apparatus, is hinged or connected with the main frame by the hinge-joint connections.

Sixth. The platform of said defendants' harvester corresponding with the platform of the said 14th claim, is the quadrant-formed platform in the rear of the cutting apparatus.

Seventh. The combined rake and reel of the said defendants' harvester corresponding with that of the said 14th claim, is the revolving raking device before referred to by me.

All of the said seven devices in the said defendants' harvester are combined together in such manner that the combination has the same peculiarities as the said combination of said 14th claim.

In making the above statement, I have taken into consideration the fact that the said devices in said defendants' harvester, when considered separately, differ in some respects from those represented in the drawings of the said reissue No. 2224; but I do not consider these differences material, because, as I understand the said reissue, the combination of the said 14th claim is not restricted to minor peculiarities of the devices of which it is composed; and because the said

93 differences do not change the relationship of the devices to each other required by the said 14th claim, nor, in substance, the mode of operation of the combination composed of them.

Q. 11. Please compare the combined reaping and mowing machine, Complainants' Exhibit, Defendants' Harvester, with the structure described and shown in Hoffheins' reissue No. 2224, and more particularly specified in the 16th claim of that patent, and state whether or not you find the structure specified in the said 16th claim in the said Exhibit, Defendants' Harvester, and give your reasons for any opinion you may express.

A. Upon making the comparison required by the question, I find that the said defendants' harvester contains, in substance, the same combination of devices as is recited in the said 16th claim. My reasons for this opinion are as follows: The combination of the said 16th claim, as I understand the said reissue, is composed of the following devices, namely:

First. The combined rake and reel having the characteristics before referred to by me.

Second. The cutting apparatus of the machine before referred to by me as being secured to the finger-beam.

Third. The hinge-joint connection, by means of which the cutting apparatus is connected with the main frame of the machine, with the capacity to rise and descend relatively thereto.

Fourth. The main frame with which the cutting apparatus is connected by the hinge-joint connection.

Fifth. The device called in the patent a yielding belt tightener, which consists of a stock carrying pulleys and fitted with a spring, the whole so arranged that it can operate upon the belt, by means of which the rake, connected with the cutting apparatus, is driven from the frame to which the said cutting apparatus is hinged, so that the said belt tightener may operate upon the belt with a yielding manner, and keep it tight, notwithstanding the variations of the belt caused by the change of position of the hinge-cutting apparatus, and the rake secured thereto relatively to the frame, to which said cutting apparatus is hinged.

94 Now, I find in said defendants' harvester five devices corresponding with those of the said 16th claim, and combined together substantially in the same manner. The said five devices in the said defendants' harvester are the following, namely:

First. The combined rake and reel in said defendants' harvester, corresponding with that of the said 16th claim, is the revolving rake having the combination and mode of operation heretofore referred to by me.

Second. The cutting apparatus of the said defendants' harvester, corresponding with that of the said 16th claim, is the cutting apparatus composed of the fingers and cutter-blade, as before mentioned by me.

Third. The hinge-joint connection of the said defendants' harvester, corresponding with that of the said 16th claim, is the hinge-joint connection before referred to by me as composed of the iron link connected at one end with the frame of the machine by a hinge-joint, and connected at the other end with the finger-beam of the cutting apparatus.

Fourth. The frame of the said defendants' harvester, corresponding with the frame of the said 16th claim, is the frame supported on wheels, with which the cutting apparatus is connected by the hinge-joint connection.

Fifth. The yielding belt-tightener of the said defendants' harvester, corresponding with that of the said 16th claim, is the device that is

placed beneath the endless chain which drives the rake. This yielding belt-tightener consists of a stock, carrying at its outer end a pulley to operate upon the chain; and it is fitted at its butt with a spring which causes the pulley of the belt-tightener to operate upon the endless chain with a yielding pressure, and to keep it tight, notwithstanding the variations of the chain caused by the change of position of the hinged cutting apparatus, and the rake secured thereto, relatively to the frame to which the said cutting apparatus is hinged.

In making the foregoing statement, I have taken in consideration the fact that the belt represented in drawings of the said reissue is a belt with a continuous surface, while the belt of the said defendants' harvester is an endless chain, or chain-belt; but I do not consider this difference material, because an endless chain is a well-known
95 equivalent for an endless belt, for the purpose of driving machinery of various descriptions, and is frequently used in harvesters for such purposes.

I have also taken into consideration the fact that the yielding belt-tightener represented in the drawings of reissue No. 2224, is provided with two pulleys, while the yielding belt-tightener of the said defendants' harvester is fitted with but one pulley; but I do not regard this difference material, because, as I understand the said reissue, the said 16th claim is not restricted to a yielding belt-tightener having two pulleys, and because the yielding belt-tightener of said defendants' machine operates to keep the chain of that machine tight by bearing against the chain with a yielding pressure, in the same manner as the belt-tightener of the said 16th claim does.

Q. 12. Please compare the combined reaping and mowing machine, defendant's harvester, with the structure described and shown in the Hoff heins' reissue, No. 2224, and more particularly specified in the 19th claim of that patent, and state whether or not you find the structure specified in the said 19th claim, in the said Exhibit, Defendants' harvester, and give your reasons for any opinion you may express.

A. Upon making the comparison required by the question, I find that the said exhibit, defendants' machine, contains, in substance, the same combination of devices that is recited in the said 19th claim. My reasons for this opinion are as follows: As I understand the said reissue, the combination recited in the said 19th claim, is composed of the following devices, namely:

First. The draft-frame to which the horses are attached.

Second. The finger-beam to which the cutting apparatus is secured.

Third. The platform in the rear of the finger-beam for holding the cut grain while it is being raked.

Fourth. The hinge connection, by means of which the finger-beam is connected with the draft-frame.

Fifth. The rake by means of which the grain is removed from the platform.

Sixth. The extensible means of driving the rake, which means, as represented in the drawings of the reissue, is a belt bent over a
96 yielding pressure-tightening device, so that the distance between the pulley connected with the rake and the pulley of the draft-frame, from which the rake is driven, may be extended or contracted.

The combination of the said 19th claim is not every combination of the said six devices, but is that combination of them in which the rake is connected with the platform, so that the platform and rake can, by reason of the hinge connection with the the draft-frame, rise and fall together; and the said devices are so combined that the said extensible

means for driving the rake, by extending or contracting, permits the platform and rake to rise and fall together, and accommodate themselves, independent of the draft-frame, to the undulation of the ground, notwithstanding the fact that the rake is driven from the draft-frame, which does not rise and fall with the platform and rake.

Now, I find that the said machine, defendants' harvester, contains six devices corresponding with those of the said 19th claim, and combined together, so that the combination formed by them has the same mode of operation as that of the said claim. The devices to which I refer are the following:

First. The draft-frame of the said defendants' harvester, corresponding with that of said 19th claim, is the frame supported on wheels and fitted with a tongue.

Second. The finger-beam of said defendant's harvester, corresponding with the finger-beam of said 19th claim, is the iron bar or beam to which the cutting apparatus in that harvester is secured.

Third. The platform of the said defendants' harvester, correspo'ding with that of the said 19th claim, is the quadrant-formed platform in the rear of the finger-beam of that harvester.

Fourth. The hinge connection of the defendants' harvester, corresponding with that of the said 19th claim, is the link before referred to by me, which connects the finger-beam with the draft-frame by a hinge-joint.

Fifth. The rake of said defendants' harvester, corresponding
97 with the rake of said 19th claim, is the rake before referred to by me in that harvester.

Sixth. The extensible means of driving the rake in the said defendants' harvester, corresponding with the extensible means of said 19th claim, is the endless chain belt bent over the yielding pressure-tightening pulley, so that the distance between the pulley connected with the rake and the pulley of the draft-frame, from which the rake is driven, may be extended or contracted.

The said devices in the said defendants' harvester have the same peculiarities of combination as that of the said 19th claim, as above stated by me.

In making the above statement, I have taken into consideration the fact that some of the devices of the said defendants' harvester, when considered separately, differ in some respects from the corresponding devices of the machine represented in the drawings of the said reissue No. 2224; but I do not consider the said differences material, because, as I understand the said reissue, the combination recited in the 19th claim is not restricted to minor peculiarities of the devices of which it is composed, and because the said differences of the devices of the said defendants' harvester do not change the relationship of the devices to each other, required by the said 19th claim, nor change, in substance, the mode of operation of the combination composed of them.

Q. 13. Please look at the patent, Complainants' Exhibit, Hoffheins' Reissue No. 2490, and state whether or not the combined reaping and mowing machine, Complainants' Exhibit, Defendants' Harvester, contains the mechanism described and shown in that patent, and more particularly specified in the first claim thereof, and give your reasons for any opinion you may express.

A. Upon making the comparison required by the question, I find that the said machine, defendants' harvester, contains, in substance, the same combination of devices which is recited in the first claim of the said reissue No. 2490.

My reasons for this opinion are as follows: The combination
98 of said first claim, as I understand the said reissue, is composed of the following devices, namely:

First. The main frame mounted upon two running wheels.

Second. A driver's seat mounted upon the said main frame.

Third. A raking mechanism, whose rakes revolve around an upright axis, which is vertical, or nearly so.

Fourth. The finger-beam of the machine, to which the cutting apparatus is secured.

Fifth. The hinged-joint connection between the finger-beam and the main frame.

The said combination is characterized by the peculiarities that the rake arms revolve around an upright axis, and that the rake mechanism is mounted upon the the finger-beam, so as to maintain the same relationship to the said beam, notwithstanding the rise or descent of the finger-beam permitted by its connection with the main frame by means of the hinged-joint; also that the driver can ride upon the machine while the rake is in operation, so that he may be in a position to control the operation of the members of the machine, as well as to drive the horses.

Now, I find that the machine, defendants' harvester, has five devices corresponding with the said five of the first claim of the said reissue No. 2490, and combined together in the same way. The said devices in the said defendants' harvester, are the following:

First. The main frame, corresponding with that of the said first claim, is the frame mounted upon two running wheels and having a tongue connected with it.

Second. The driver's seat of the said defendants' Harvester, corresponding with that of the said first claim, is the driver's seat which, in said defendants' harvester, is mounted upon the main frame of that machine.

Third. The raking mechanism of said defendants' harvester, corresponding with that of the said first claim, is the raking device before referred to by me in this examination; it being so constructed that its rake revolves around an upright axis, which is vertical, or nearly so.

Fourth. The finger-beam of the said defendants' harvester,
99 corresponding with that of the said first claim, is the iron bar to which the cutting apparatus is secured.

Fifth. The hinged-joint connection of the said defendants' harvester, corresponding with that of the said first claim, is the hinge-link which connects the finger-beam with the main frame.

The said five devices in the said defendants' harvester are combined together so that they bear the same relationship to each other as the said five devices of the said first claim do. Moreover, the said combination of them in the said defendants' harvester has the same peculiarities and mode of operation as the combination of the said first claim has, as above stated by me.

In making the above statement, I have taken into consideration the fact, that there are some differences of construction between the said devices of the said defendants' machine and those of the machine represented in the drawings of reissue No. 2490; but I do not regard these material, because, as I understand the said reissue, the combination of the first claim is not restricted to the minor peculiarities of the devices of which it is composed; and because the differences that exist between the said five devices of the defendants' harvester and those of the said first claim do not change, in substance, the mode of operation of the

devices in the combination composed of them, nor their relationship to each other, nor the mode of operation of the combination.

Q. 14. Please look at the patent, Complainants' Exhibit, Hoffheins' Reissue No. 2490, and state whether or not the combined reaping and mowing machine, Complainants' Exhibit, Defendants' Harvester, contains the mechanism described and shown in that patent, and more particularly specified in the second claim thereof, and give your reasons for any opinion you may express.

A. Upon making the comparison required by the question, I find that the said machine, defendants' harvester, contains, in substance, the same combination of devices that is recited in the second claim of reissue No. 2490.

My reasons for this opinion are as follows: The combination
100 of said second claim, as I understand the said reissue, is composed of the following devices, namely:

First. The draft-frame by which the machine is drawn forward, and which is supported on two running wheels.

Second. The cutting apparatus, composed of slotted guard-fingers and the reciprocating cutter-bar, fitted with cutter-blades.

Third. The platform in the rear of the cutting apparatus, which platform receives the grain as it is cut.

Fourth. The raking apparatus, which is a revolving rake having the 'akes revolving around a central axis.

Fifth. The shoe, which is a species of short runner, arranged at the inner end of the cutting apparatus, and is a separate device from the drag-bar, by means of which the cutting apparatus is drawn from the draft-frame.

Sixth. The hinged-joint, by means of which the cutting apparatus and platform are connected with the draft-frame, with the capacity to turn up and down, relatively thereto, upon an axis which is crosswise of the length of the cutting apparatus.

Seventh. The device called the "Extension J," which is an arm or bracket, connected rigidly with the cutting apparatus and platform, and extending from the inner end of the cutting apparatus crosswise of the draft-frame.

Examination adjourned to Saturday, January 15th, 1876, at 10 a. m.

101 NEW YORK, *January 15th*, 1876—10 o'clock a. m.

Met pursuant to adjournment.

Present, counsel, as before.

Examination of E. S. Renwick continued:

The combination of the said devices is not every combination of them, but is that combination of them which is characterized by the peculiarities that the hinged joint is in the shoe; that the rake, platform, and cutting apparatus are all attached or connected with each other, so as to move together upon the hinged joint; and that the extension device or arm is so arranged that it may be connected with the draft-frame at a point between the two drive-wheels, so that the draft-frame sustains, at this point, the weight of the cutting apparatus and raking apparatus with the platform attached.

Now, I find that the said defendants' harvester contains seven devices corresponding substantially with those above mentioned by me, and combined in the same manner. The devices in the said defendants' harvester, to which I refer, are the following, viz:

First. The draft-frame of the said defendants harvester correspond-

ing with the draft-frame of the said second claim, is the frame which is fitted with a tongue and is supported on two running wheels.

Second. The cutting apparatus of the said defendants' harvester corresponding with that of the said second claim, is the cutting apparatus of the said harvester, which is composed of slotted guard-fingers and of the reciprocating cutting-bar fitted with cutter-blades. This cutting apparatus is combined with the other members of the combination in the same manner as the cutting apparatus of the said second claim, namely, through the intervention of the finger-beam.

Third. The platform of the said defendants' harvester, corresponding with that of the said second claim, is the raking platform in the rear of the cutting apparatus.

Fourth. The rake, or raking apparatus of the said defendants' harvester corresponding with the said rake or raking apparatus of the said second claim, is the revolving rake whose rakes revolve around a central axis in that harvester.

102 Fifth. The shoe in the said defendants' harvester is the short cast-iron runner at the inner end of the cutting apparatus, which corresponds with that of the said second claim, in being a separate device from the drag-bar, by means of which the cutting apparatus is drawn forward from the draft-frame.

Sixth. The hinged joint of the said defendants' harvester corresponding with that of the said second claim is the hinged joint formed by the hinge-lugs and pivots, by means of which the cutting apparatus and raking apparatus, with the platform attached, are connected with the draft-frame, with the capacity to turn up and down, relatively thereto, upon an axis, which is crosswise of the length of the cutting apparatus.

Seventh. The extension device of the said defendants' harvester corresponding with that of the said second claim, is the arm or bracket in the said harvester, which is connected rigidly with the cutting apparatus and platform, and extends from the inner end of the cutting apparatus crosswise of the draft-frame.

The said seven devices of the said defendants' harvester are so combined that the combination has the same peculiarities as that of the said second claim, and is attended with the same result as respects the point at which the weight of the cutting apparatus, raking apparatus, and platform are sustained.

In making the above statement, I have taken into consideration the fact that the said devices of the said defendants' harvester differ in some respects from those of the machine represented in the drawings of the reissue No. 2490; but I do not consider these differences material, because, as I understand the said reissue, the combination of the said second claim is not restricted to the minor peculiarities of the devices of which it is composed, when considered separately, and because the said differences do not change the relationship which exists between the said devices of the said defendants' harvester as compared with the relationship of the devices of the said second claim, and do not prevent the combination of the said seven devices in the said defendants' harvester from operating in the same manner as the combination of the said second claim.

103 Q. 15. Please look at the patent, "Complainants' Exhibit, Hoffhein's Reissue No. 2490," and state whether or not he combined reaping and mowing machine, "Complainants' Exhibit, Defendants' Harvester," contains the mechanism described as shown in that patent, and more particularly specified in the sixth claim thereof, and give your reasons for any opinion you may express.

A. Upon making the comparison required by the question, I find that the said machine, defendants' harvester, contains substantially the same combination of devices as is recited in the said sixth claim. My reasons for this opinion are as follows: As I understand the said reissue No. 2490, the combination of the said sixth claim is composed of the following devices, namely:

First. The draft-frame supported upon two wheels, one of which is called in the patent the inner drive wheel, it being that one of the two which is at the side of the draft-frame nearest the cutting apparatus.

Second. A revolving rake, or a combined revolving rake and reel, whose arms revolve around an upright axis that is vertical, or nearly so.

Third. A driving device for communicating motion from the main frame to the revolving rake.

The combination of the said sixth claim is not every combination of the said three devices, but is that combination of them in which the driving device is arranged on the grain side of the drive wheel or inner side of the draft-frame, or, in other words, is arranged at that side of the inner drive wheel, or at that side of the draft-frame which is nearer the standing grain when the machine is in operation, in contradistinction to being arranged between the two drive wheels of the said draft-frame, or at some other part of the draft-frame than its inner side.

Now, I find that the said defendants' harvester contains three devices which correspond with those of the said sixth claim, and are combined substantially in the same way. The devices to which I refer in the said defendants' harvester are the following, viz:

First. That the draft-frame of the said defendants' harvester, corresponding with that of the said sixth claim, is the frame fitted with the tongue, and supported upon two running wheels, one of which
104 is the inner drive wheel of the machine, being that one which is at the side of the draft-frame nearer the cutting apparatus.

Second. The revolving rake of the said defendants' harvester corresponding with that of the said sixth claim, is the combined rake and reel of that harvester whose arms revolve around an upright axis which is vertical, or nearly so.

Third. The driving device of the said defendants' harvester corresponding with the said driving device of the said sixth claim, is the endless chain which in said harvester communicates motion from the draft-frame to the revolving rake.

The said three devices in the said defendants' harvester are combined in the same manner, and with the same arrangement of the driving device as characterizes the combination of the said sixth claim.

In making the foregoing statement, I have taken into consideration the fact, that the driving device represented in the drawings of the reissue No. 2490, is an extensible shaft, capable of changing its position to accommodate itself to variations in the relative positions of the revolving rake and draft-frame, which are due to the combination of these two through the intervention of a hinged joint, while the corresponding driving device of the said defendants' harvester is an endless chain, having the same capacity of extension and of changing its positions to accommodate itself to the same variations. But I do not regard this difference material, because, as I understand the said reissue, the combination of the said sixth claim is not restricted to the peculiar construction of the driving device as represented in the drawings, but is restricted to a particular arrangement of it which exists in the said defendants' harvester, as well as in the machine of reissue No. 2490;

and because an extensible band is a substitute for the extensible shaft for the same purpose, such a band or belt being found in the earlier Hoffheins patent.

I have also taken into consideration the fact that the other two devices of the said defendants' harvester, when considered separately, differ in some respects from those with which they correspond in the machine No. 2490; but I do not consider these differences ma-
105 terial, because, as I understand the said reissue, the combination of the said sixth claim is not restricted to the minor peculiarities of the devices of which it is composed; and because the said differences do not change the relationship of members in the combination of which they form part, nor the operation of the combination formed by the said three devices, in any substantial respect.

Q. 16. Please look at the patent, Complainants' Exhibit, Hoffheins Reissue No. 2490, and state whether or not the combined reaping and mowing machine, Complainants' Exhibit, Defendants' Harvester, contains the mechanism described and shown in that patent, and more particularly specified in the seventh claim thereof, and give your reasons for any opinion you may express.

A. Upon making the comparison required by the question, I find that the machine, defendants' harvester, contains, in substance, the same combination of devices which is recited in the said seventh claim.

My reasons for this opinion are as follows: The combination of the said seventh claim, as I understand the said reissue, is composed of the following devices, viz:

First. The draft-frame, supported upon two wheels, which are fitted to an axle, which is called in the said seventh claim the main-frame axle.

Second. The revolving rake, or combined rake and reel, whose arms revolve about an axis that is vertical, or nearly so.

Third. The driving connection, by means of which motion is transmitted from the draft-frame to the revolving rake.

The combination of the said seventh claim, as I understand the said reissue, is not every combination of the said three devices, but is that combination of them which is characterized by the peculiarity that the said driving connection is direct between the revolving rake and the inner end of the main-frame axle of the draft-frame.

Now, I find that the said defendants' harvester contains three devices which correspond with those of the said claim, and are combined together substantially in the same manner.

106 The devices in the said defendants' harvester, to which I refer, are the follwing, viz:

First. The draft-frame in said harvester corresponding with the draft-frame of the said seventh claim, is the frame which is fitted with the tongue, and is supported upon the two wheels, which are fitted to an axle, this axle being the main axle of that frame.

Second. The revolving rake of the said defendants' harvester corresponding with that of the said seventh claim, is the revolving rake which is mounted at the inner end of the cutting apparatus, and has arms which revolve around an axis which is vertical, or nearly so, so that it acts as a combined rake and reel, as I have explained in an earlier part of this examination.

Third. The driving connection of the said defendants' harvester, corresponding with that of the said seventh claim, is the extensible chain which transmits motion from the draft-frame to the revolving-rake.

The said extensible chain receives motion directly from the inner end

of the main axle of the draft-frame, and transmits it to the revolving rake, so that the combination of the said three devices in the said defendants' machine is characterized by the *the* peculiarity of the combination of the said seventh claim.

In making the foregoing statement, I have taken into consideration the differences between the driving connection represented in the drawings of the said reissue and the driving connection of the said defendants' harvester, the former being that kind of extensible driving connection which is called in the patent a tumbling shaft, while the latter is an extensible chain band. I have also taken into consideration the differences which exist between the other two members of the combination in the defendants' harvester and the devices with which they correspond, as represented in the drawing of the said reissue No. 2490. But I do not consider these differences material, for the same reasons that have been given by me when referring to the same differences in the latter part of my answer to the last preceding question.

Q. 17. Please look at the patent, Complainants' Exhibit, Hoffheins' Reissue No. 2490, and state whether or not the combined reaping
107 and mowing machine, Complainants' Exhibit, Defendants' Harvester, contains the mechanism described and shown in that patent, and more particularly specified in the ninth claim thereof, and give your reasons for any opinion you may express.

A. Upon making the comparison required by the question, I find that the said defendants' harvester contains, in substance, the same combination of devices which is recited in the said ninth claim.

My reasons for this opinion are as follows: As I understand the said reissue, the combination of the said ninth claim is composed of the following devices, viz:

First. A quadrant platform, which is a raking platform constructed so as to resemble a quadrant of a circle, and is adapted to receive the cut grain at one of its straight sides, to permit the grain to be swept round upon it in circular curves, and to permit the grain to be discharged at its other straight side, with the stalks at right angles, or thereabouts, to the directions occupied by them when they were first received upon the platform.

Second. The finger-beam, which is a beam or bar that extends along the front side of the platform, and sustains the fingers of the cutting apparatus.

Third. The hinge joint or connection, by means of which the inner end of the finger-beam is connected with the main frame of the machine, with the capacity to turn up and down upon an axis, which is crosswise of the length of the finger-beam.

Fourth. The revolving rake, whose arms revolve around an axis which is vertical, or nearly so.

Fifth. The driver's seat.

Sixth. The main frame of the machine, which, as represented in the drawings of the patent, is supported upon two driving-wheels.

The combination of the said ninth claim is not every combination of the said devices, but is that combination of them which is characterized by the following peculiarities, viz: That the revolving rake and quadrant platform are all attached or connected with each other, so that the three maintain their relative positions while the finger-
108 beam moves relatively to the main frame, by reason of the hinge connection of the two; also that the driver's seat is mounted upon the main frame so that he may ride thereon in such a position that his weight may aid in counterbalancing the weight of the rake and plat-

form, and his hands may be conveniently employed for controlling the machine, notwithstanding the fact that the rake revolves upon an upright axis, and the rake is attached to the finger-beam and moves with it upon a hinge-joint connection.

Now, I find that the said defendants' harvester contains six devices which correspond with those of the said ninth claim, and are combined in the same way, the said devices of the said defendants' harvester being the following, viz:

First. The quadrant platform of the said defendants' harvester, corresponding with that of the said ninth claim, is the raking platform in the rear of the cutting apparatus, the said platform in the said harvester having the same features as that of the said ninth claim, as above stated by me.

Second. The finger-beam of the said defendants' harvester is the iron bar which extends along the front side of the platform and sustains the fingers of the cutting apparatus.

Third. The hinge joint or connection of the said harvester, corresponding with that of the said ninth claim, is the iron bar or link which is hinged at the inner end of the finger-beam, and is the means by which that inner end is connected with the main frame of the machine, with the capacity to turn up and down upon an axis which is crosswise to the length of the finger-beam.

Fourth. The revolving rake of the said defendants' harvester, corresponding with that of the said ninth claim, is the revolving rake before referred to by me as being mounted at the inner end of the finger-beam.

Fifth. The driver's seat of the said harvester, corresponding with that of the said ninth claim, is the seat placed upon the main frame in that harvester.

Sixth. The main frame of said defendants' harvester, corre-
109 sponding with that of the said ninth claim, is the frame which is supported upon two wheels and has the tongue attached to it.

The said six devices of the said defendants' harvester are combined together in such manner that the combination formed by them has the same peculiarities as the combination of the said ninth claim has, as above stated by me.

In making the foregoing statement, I have taken into consideration the fact that the said devices of the defendants' harvester, when considered separately, differ in some respect from the corresponding devices of the machine represented in the drawings of the said reissue No. 2490; but I do not regard these differences as material, because, as I understand the said reissue, the combination recited in the ninth claim is not restricted to the minor peculiarities of the devices of which it is composed; and because the said differences do not change, in substance, the mode of operation of the combination, nor the relationship of the members thereof to each other.

Adjourned, by consent of parties, until Monday, January 24th, 1876, at ten o'clock a. m., for cross-examination of the witness by defendants' counsel.

NEW YORK, *January* 24, 1876.—10 o'clock a. m.

Met pursuant to adjournment.

Present, counsel as before.

Adjourned to January 27, 1876, 10.30 o'clock a. m.

110 NEW YORK, *January* 27, 1876—10.30 o'clock a. m.

Met pursuant to adjournment.

Present, counsel as before.

Cross-examination of witness E. S. RENWICK:

X Q. 18. In referring to the invention described in reissue No. 2224, and as illustrated in the model (Patent Office model referred to), did you understand from said specification, or from your knowledge of the prior state of the art, that the machine shown in said model, with the reel post removed, together with its appendages, the suspension bar and chain and the mechanism for driving the reel, was an old and known machine?

A. At the time of giving my direct evidence in this case, I did not keep in my mind any understanding such as is stated in the question, but upon considering the matter now, and in view of the fact, that no claim is made to the invention of the machine in the condition in which it would exist after the removal of the parts mentioned in the question, I should infer that the patentee did not consider it new in that condition. So far as my own understanding is concerned, as based upon the state of the art, I may say that I have examined so many copies of patents of reaping machines that it is practically impossible for me to keep the dates of different inventions in my mind, and therefore, in the absence of any memoranda to refresh my memory, I am not prepared to state whether the machine in the condition mentioned in the question was or was not old and known prior to the date of Hoffheins' original patent. If the platform had been removed as well as the other part mentioned in the question, I should have no doubt as to the fact of the residue of the machine being old and well known prior to the date of Hoffheins' original patent.

X Q. 19. What did you understand the word "sweep-rake" to mean in the first claim?

A. I understand it to mean a rake which had an arm or arms constructed to revolve upon an axis that runs upright in such manner that the teeth of the rake would sweep over the raking platform in curves,

111 delivering the grain end foremost at one side of the platform, so that it shall be behind the horses and out of their track when the next swath was being cut.

X Q. 20. Was not the vibrating rake, used by Seymour & Morgan, which vibrated across the platform in curves, discharging the grain in the arc of a circle behind the horses, known as a sweep-rake?

A. I have known the vibrating rake of Seymour & Morgan to be called a sweep-rake.

X Q. 21. If the rake shown in the model, patent No. 2224, vibrated across the platform instead of revolving round the centre, would you call that a sweep-rake or not?

A. If the rake shown in the model were constructed with a single arm, operating to vibrate across the platform from the centre-bar to the delivery side thereof, I should say that it was a sweep-rake, in the sense in which that term was used in reference to the sweep-rake of the Seymour & Morgan machine, but I should also say that in such case, the rake was not a sweep-rake in the sense in which that term is used in the reissue No. 2224, as I understand the same.

X Q. 22. Do you understand that there is any difference between the word "sweep-rake," as used in the first claim, and the words "continuously-revolving rake," as used in the 12th claim?

A. I understand that practically there is no difference between the

devices which are mentioned by the two different names; the device referred to by each name being the same thing.

X Q. 23. Suppose a vibrating rake known as a sweep rake at the time of the granting of this patent, were to be pivoted on the top of the post shown in the model of Hoffheins' patent, model No. 2224, what is there in the words of the 1st claim to exclude such machine from its scope?

A. There is the reference to the descriptive portion of the specification given by the words "substantially as described," at the end of the claim, these words indicating that the devices which are referred to in the claim are to be substantially those which are described in the descriptive portion of the specification.

112 X Q. 24. Do you understand the word' "a rake," in the 8th claim to have the same meaning?

A. I do, when taken in connection with the reference to the descriptive portion of the patent given in the words, substantially as described, at the end of that claim.

X Q. 25. What do you understand to be the precise difference between the construction pointed at in the first claim and the twelfth?

A. The combinations of the two claims comprise certain devices which are common to both, but the combination of the 1st claim requires the cutting apparatus as one of its members, while the combination of the 12th claim does not. On the other hand, the combination of the twelfth claim requires the outer divider as one of its members, while the combination of the first claim does not. Again, the combination of the first claim is restricted to the arrangement or location of the sweep-rake at the heel or inner end of the finger-beam, or upon the inner front corner of the platform of the harvester, while the combination of the 12th claim gives more latitude in the location of the rake, this combination being restricted only to the arrangement or location of the rake between the centre of the draft-frame and the outer divider.

X Q. 26. Do you understand the word, "outer divider," to be used in the 12th claim in the same sense as the words "centre of the draft-frame," as words "a boundary or possible position of the rake"?

A. I understand those words to be used as limitations or bounds, between which the rake is to be located.

X Q. 27. Do you understand the 8th claim to refer to a position of the support of the rake bounded on one hand by the outside of the inner drive-wheel and on the other hand by the outer divider?

A. I understand that the 8th claim refers to two positions, either of which is within the description of the claim: one of the two positions is a position outside of the inner drive-wheel, the other of the two positions is one which is between the point of suspension from the main frame and the outer divider.

113 X Q. 28. In the machine as shown in the patent and model, the latter boundaries include the former, do they not?

A. They do not; because the words, "outside of the inner drive-wheel," as I understand the same, refer to a position which is between the two driving-wheels; now it so happens in the machine represented in the drawing, that the point of suspension is behind the rim of the inner drive-wheel, and therefore, is nearer the place where the grain is cut, or more inward than the side of the inner drive-wheel, which is nearest to the other drive-wheel, hence the support of the rake might be outside of the inner drive wheel, that is, between it and the other

drive-wheel, and not be between the point of suspension and the outer divider.

X Q. 29. Do you understand in the 8th claim, that if the support for the rake occupied a position within either of the limits just mentioned, and that position was such that a suspension-bar and chain could be attached, that the presence of the bar and chain are necessary to bring it within the 8th claim?

A. I think that the means of suspension, consisting of the arm and the chain, or their equivalents, are essential members of the combination recited in the 8th claim, and that they must be present in the machine in order that the combination may be embodied.

X Q. 30. Then you don't think that if the support of the rake occupied a position within the limits described, and so that it could also be hung or suspended below the draft-frame that it would be within that claim, unless it was so actually suspended?

A. The support of the rake might occupy one of the positions described, namely, that outside of the inner drive-wheel without any means of suspension being present in the machine, but if it occupied the other position which is mentioned, it seems to me that the fact of its occupying that position necessarily carries with it the fact that means of suspension must exist in the machine because the position is defined as being between the point of suspension on one side. But whatever might be the capacity of the machine, it is essential as I understand the
114 combination of the 8th claim, that the machine must contain the means of suspension, although it would not be necessary, in my opinion, that the chain or link should actually be hooked on to the hook of the frame.

X Q. 31. Do I understand that under the first alternative mentioned in your last answer the suspension is not necessary?

A. I have not intended to be understood that the means of suspension are not necessary in any event.

X Q. 32. Suppose a machine were built in accordance with the first alternative and without the means of suspension, would it be within the scope of this 8th claim?

A. As I understand the combination of the 8th claim, the machine would not.

X Q. 33. Do you understand that the words, "the rake," in the 8th claim, and the words "a rake," in the 9th claim, and "a rake," in the 11th claim, and the word "rake," in the 14th claim, all refer to a continuously-revolving rake, or do any of them include a vibrating rake?

A. I understand that they all refer to a rake constructed to revolve upon an upright axis, as distinguished from one constructed to vibrate to and fro in a curve or arc, and that no one of them includes a vibrating rake.

X Q. 34. Do you understand that prior to the invention or date of the original patent of which 2224 is a reissue. continuously-revolving rakes were known under such an organization that they could be placed upon the platform of a machine like the Patent Office model 2224, and be practically revolved there?

A. I know that continuously-revolving rakes considered separately, were known prior to the date of the original Hoffheins' patent, but I am not prepared to state whether they were constructed in such manner that they could or could not, without change, be placed upon the platform of a machine like the Patent Office model 2224, and be practically revolved there, as I cannot keep in my mind the details of the con-

struction of the revolving-rake, drawings and descriptions of which I have seen.

X Q. 35. Can you tell from that specification, 2224, whether
115 there is any peculiarity in the construction or organization of the rake by which it is enabled to be placed on the part of the machine where it is placed, and revolve and do its work?

A. As I understand the description, there is no statement in it of any particular peculiarity of construction of the revolving rake, except that the drawings show that it must be of such proportion that it is capable of operating practically in the position in which it is placed in the machine, and the description and drawings together, show that the construction of the rake must be such that the rake must sweep over the platform when the rake is removing the grain therefrom, must rest substantially so as not to interfere with the other parts of the machine, and must descend into the standing grain in advance of the cutting apparatus or finger-beam, so as to act as a reel rib.

X Q. 36. Do you understand when you considered the question of infringement of the 1st and 12th claims of this patent, that the placing of any continuously-revolving rake upon the platform of the machine, like Patent Office model 2224, and securing it there so that it could revolve within the boundaries mentioned in those claims, would be an infringement of those claims?

A. I do not; because as I understand the language of the question, the words "any continuously-revolving rake," are broad enough to include a continuously-revolving rake, which might not operate in the combination substantially as the one described in the patent.

X Q. 37. You are familiar with the Dorsey rake, as patented by him, are you not?

A. I have examined the patent granted for the Dorsey rake, but never saw one in operation that was constructed exactly as represented in the drawings of the patent.

X Q. 38. Would the placing of a rake like that upon the platform of the machine shown in Patent Office model 2224, within the limits mentioned in the 1st and 12th claims, and securing it there so that it could revolve, form a combination which you think would be within that claim?

A. I am not prepared to say whether the Dorsey rake de-
116 scribed in his patent, would or would not, without material change, operate practically if it were substituted in place of the rake mechanism represented and described in the drawings of the reissue patent 2224, but if the Dorsey rake when so substituted would operate practically and the other members of the combinations received in the said two claims were present in the machine, I should say that the machine produced by the substitution would embody, in substance, the combination of the said two claims.

X Q. 39. What invention do you understand there to be in taking a known rake and placing it upon the platform of a known machine and securing it there?

A. I understand that, first of all, there was the mental conception that a certain rake could possibly be used in connection with a machine with which it had never before been used. Second. There was the mechanical adaptation of the known rake to the peculiarities of the machine with which it was to be for the first time combined. Third. There was the new combination of devices produced by combining together the peculiar rake and the members of the peculiar machine; and the invention might be accompanied with results which could not

have been obtained by the rake and machine separately; in other words, the inventor would combine in one machine the advantages incident to the rake and the machine with which it was for the first time combined.

X Q. 40. Do you understand that there are peculiarities and features of adaptation set forth in reissue 2224, whereby the particular rake there described is enabled to be placed where it is placed and perform its work, and is the peculiar organization of said rake as set out in the 3d, 4th, 5th, 6th, and 7th claims?

A. I do not understand the specification as setting forth that the particular features, which are recited in the 3d, 4th, 5th, and 6th claims, are necessary features of adaptation to enable the rake to be placed where it is placed.

X Q. 41. Does the specification set forth any special description by which revolving rakes, previously known, were to be modified so
117 as to be placed upon the platform of such a machine otherwise than by describing an organization of rake substantially that set forth in the 3d, 4th, 5th, 6th, and 7th claims?

A. The specification does not set forth any directions for modifying revolving rakes previously known. It describes a machine having a revolving rake with the peculiarities that I have referred to when speaking of those of the claims to which I was referred upon my direct examination, and in addition, it describes the peculiarities which are referred to in the 3d, 4th, 5th, 6th, and 7th claims.

X Q. 42. Is the suspension-chain and bracket an essential element in the claims 8, 9, 11, and 14?

A. Either those devices or their equivalents are essential members of the claims mentioned in the question, as I understand the reissued patent.

X Q. 43. Do you understand that the specification sets out any special mode or instructions for attaching the support of the rake to the platform with a view to secure stability of position?

A. I understand that the specification does not restrict the invention to any special mode of attaching the support of the rake to the platform, but it describes and represents in the drawing that it must be connected rigidly with the platform or finger-beam.

X Q. 44. What do you understand to be the difference between the suspension-bar and chain in reissue 2224 and the suspension-bar and chain in the reissue 2490?

A. I understand that there is no substantial difference between the suspension-bars and chains of the two machines considered by themselves and irrespective of the peculiarities of arrangement of the suspension-bar or arm in the two machines.

X Q. 45. What is the difference of construction, operation, and arrangement?

A. There are no substantial differences of construction between the arms of the two machines. So far as the suspension of the platform, finger-beam, and rake mechanism from the main or draft frame of the machine, irrespective of the part of the draft-frame from which
118 the suspension is effected, there is no substantial difference in the mode of operation of the two arms. There is, however, a difference in the arrangement of the two, namely, that the suspension-arm of the machine of reissue No. 2490, is so arranged that it may be connected with the draft-frame at a point intermediate between the two drive-wheels, so that the draft-frame sustains the weight of the suspended parts at such intermediate points, and that the weight is

distributed to the two drive-wheels; whereas, in the arrangement represented in the drawing of reissue 2224, the arm is so arranged as to be suspended from a part of the frame which is behind one of the drive-wheels and further off from the other drive-wheel than the centre of that wheel behind which it is suspended, so that the weight of the suspended parts is thrown wholly upon one side of the frame and upon one of the drive-wheels only.

X Q. 46. In giving your evidence with reference to the machine described in patent 2490, do you understand there is described and shown in the drawing and model a seat on which a driver can sit while the machine is in operation?

A. I do.

Adjourned to Friday, the 28th day of January, 1876, at 11 o'clock.

NEW YORK, *January* 28, 1876—11 o'clock a. m.

Met pursuant to adjournment.

Present, counsel as before.

Cross-examination of E. S. Renwick continued:

X Q. 47. Having reference to the relative position of the end
119 of the suspension-bar in model of 2490, and to the fact that the chain in the drawing is shown in a vertical position can state whether the weight produced on the suspension-bar should be referred to a point in the machine behind the inner wheel or not?

A. In the model referred to the screw which holds the hook, to which the suspension chain is applied, is loose, and the hook is turned sideways, the chain also at the present time is detached from the hook, and in the latter condition the weight is not applied to any part of the frame. If the chain were hooked on to the hook when the latter is turned sideways, as it now is, the weight would be thrown behind the inner drive-wheel. If, however, the posts of the machine occupy the positions in which they are represented in the drawings of the patent, as I understand it, the hook for the chain projects backward from the butt end of the tongue instead of sideways, and the weight would be thrown upon a point between the two drive-wheels. The position of the hook is shown in two figures of the drawings, namely, figure 1 and figure 2, and although the tongue in figure 2 is shifted, yet the hook projects directly back from it, and as the hook is not used when the machine is in the condition represented in figure 2, that figure is conclusive evidence to any mind that the hook projects directly backward from the butt of the tongue, and not sidewise.

(Answer objected to as not responsive, and as containing volunteer answers of the witness not called for by the question.)

X Q. 48. Do you understand that the combination in the 1st claim and the 5th claim and 9th claim of patent No. 2490 covers the combination of a driver's seat, no matter where located, so that it is attached to the frame in any way, and a revolving rake of any kind attached to or connected with any part of the platform or cutter-bar of a double-hinge machine, having any kind of a continuously-revolving rake upon it, or immediately attached to it, moving upon a vertical axis?

A. I do not.

X Q. 49. Do you understand that either of these claims is confined to any particular form of a two-wheel double-hinge joint machine?

120 A. I understand that no one of the three claims mentioned is confined to a particular form of a two-wheel double-hinge joint

machine, but that the hinge joint must be substantially such an one as is described in the specification, or must be a substantial equivalent of it.

X Q. 50. Do you understand these claims to cover a machine with a front cut and double hinge, known as the "Buckeye" type of machine?

(Question objected to as incompetent and immaterial.)

A. I cannot recollect with certainty the construction of the Buckeye machines I have seen which are constructed for reaping, and have made no examination of those machines for the purpose of ascertaining whether they do or do not contain the combination recited in the 1st, 5th, and 9th claims of the patent. Therefore I cannot state whether these machines are or are not covered by the said claims.

X Q. 50. In what do you consider the invention to consist which is set forth in the first claim; do you consider the mere attachment of a driver's seat to the machine, as shown in that patent, to be an invention?

A. I consider the invention to consist in the new combination of devices recited in the claim as stated in my answer to direct interrogatory 13.

If the attachment of the driver's seat to the machine, as shown in the patent No. 2490, was a mere attachment, or, in other words, an attachment without the production of a useful result, I should not consider such attachment an invention; but I consider that when a driver's seat is combined with parts with which it was not before combined so as to attain results which were not before attained, as in the case, so far as I know, with the combination recited in the first claim of the said patent, such combination is not a mere attachment, but is a combination constituting an invention.

X Q. 52. Do you consider that so far as the 1st and 9th claim there is any other new feature not shown in the patent of 1862, reissue 2224, except the at achment of the driver's seat?

A. I consider that the machine represented in reissue No. 2224
121 contains every device of the combinations recited in the 1st and 9th claims of the reissue No. 2490, with the exception of the driver's seat, and that the new feature, so far as respects those claims, was the combination of the driver's seat with the other devices recited in them, in the manner required by the said claim.

X Q. 53. Then, if I understand you correct, if you were to attach a driver's seat in substantially the same position shown in model 2490, upon machine 2224, you would have the combinations in those claims?

A. I am not certain that the machine would operate practically if a driver's seat, while applied to a machine, such as is represented in reissue No. 2224, in the same position in which it is shown in reissue 2490, because of the position of the driving belt of the reel in machine No. 2224. I think it is possible, however, that the driver's seat might be put further forward, and that the driver's legs might straddle the belt, although this would be an inconvenient arrangement; but if the driver's seat were so combined with the machine represented by the reissue No. 2224, I should consider that that machine would then contain in substance, the combinations recited in the 1st and 9th claims of 2490.

X Q. 54. Would the change consist in anything but the addition of a seat to a prior machine?

A. In my opinion it would. The change would produce new com-

binations attended with results which are not attained with the machine before the change.

X Q. 55. I did not ask you about results the change would produce, but I ask you whether the change itself would consist in anything else except the placing of the seat there.

A. Certainly the change would make a different machine from the one existing before the change. If, however, the question be intended to ask whether the mechanical work done in making the change was the work of putting on the driver's seat, I should say that this was the mechanical work done.

X Q. 56. Was that all the mechanical work done?

A. That would be all the mechanical work done as I understand the question.

122 X Q. 57. Please explain how the seat, as exhibited in the model drawing of reissue No. 2490, balances the raking device.

A. As the machine is arranged in model drawing of reissue No. 2490, I think that the weight of the driver's seat upon it would not balance the weight of the raking device.

X Q. 58. Please state whereabouts on the frame of that machine you would place that driver's seat so as to produce that effect of balancing apparatus described in the patent.

A. If the weight of the driver is to counterbalance the weight of the rake the driver's seat should be arranged in advance of the main axle or the axle of the drive-wheel, using the term counterbalance in the ordinary acceptation of that word.

X Q. 59. Please refer to the Buckeye machine as shown in "Defendant's Exhibit Buckeye," and state whether, supposing said machine to have a double hinge coupling, and that the rake support is rigidly attached to the platform or the finger beam, would you consider said machine, as there shown, to contain the combination set forth in the 1st and 9th claims of No. 2490.

(Question objected to as incompetent and immaterial, and not in cross-examination.)

A. I should, assuming of course, that the machine is in the condition represented in the reaper figure of one of those exhibits.

Direct examination resumed by consent:

Q. 60. Please examine the machine now shown you, marked "Complainants' Exhibit Model of Defendants' Harvester, J. Gutman, jr., examiner," and state what it represents.

A. It is a substantial representation of those portions of "Complainants' Exhibit, Defendants' Harvester," which, as before testified to by me, correspond substantially with the devices recited in the several claims of the two reissues No. 2224 and No. 2490, to which I was referred on my direct examination. It also represents the relative positions of those parts in the said "Complainants' Exhibit, Defendants' Harvester," and the manner in which they are combined therein.

E. S. RENWICK.

Complainants put in evidence the said machine marked "Complainants' Exhibit, Model of Defendants' Harvester."

123 The schedule referred to in these letters patent and making part of the same.

To all whom it may concern:

Be it known that I, Reuben Hoffheins, of Dover, in the county of

York, and State of Pennsylvania, have invented certain new and useful improvements in machines for harvesting grain and grass; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1, sheet 1, is a plain or top view of a harvester embodying my invention.

Figure 2 is a vertical section of the combined rake and reel of the harvester detached from its supports.

Figure 3 is a plan or top view of the same mounted upon its support; the arms of the rake and reel are shown as partly broken off.

Figure' 4, 5, and 6 are details of part of the mechanism for driving the combined rake and reel and for inverting the rake and reel arms.

Figure 7, sheet 2, is a side elevation of the harvester through the draft-frame, the rake platform and other parts being shown in elevation.

Figure 8 is a side elevation of the machine, seen from the grain side of the platform.

Figure 9 is a rear elevation of a portion of the machine, showing the manner of suspending the rake and reel support upon the hinge-joint finger-beam or platform thereof.

Figures 10, 11, and 11½ are details of the harvester, showing more plainly the devices for tightening the driving belt during the
124 rising of the finger-beam on its hinge joint or joints; also the clutch-pull'y by which the rake is ungeared.

Figure 12 is a perspective view of a portion of the machine, as seen from the rear thereof.

Similar letters of reference in the several figures indicate corresponding parts.

In the application of automatic rakes to harvesters which employ a "hinge-joint cutting apparatus" it is important to have the rake so contrived that the application may be readily made to the approved and commonly-used side-draft machines which are constructed with the "single" or the "double joint cutting apparatus."

It is also important to have the axis of the rake suspended between the inner drive-wheel and the outer shoe or divider; or at the left of the suspending hinge joint of the finger-beam and platform, and near to the heel of said beam; and in connection with this arrangement or location of the axis or support of the rake it is also important to have the suspension of the rake made in such a manner that the base of the support of the axis of the rake is wholly upon the hinged finger-beam, or the platform thereof; and also that the rake, the finger-beam, and the platform shall be rigidly connected together, and still be free to rise together the requisite distance by articulating on the single or the double hinge-joint connections and the suspension device of the harvester, so as to conform to the irregularities of the surface of the ground, or to move clear of stumps and other obstructions; and while thus rising to conform to the ground, or to pass obstructions, it is important that the great weight of the rake, finger-beam, and platform shall not cause the draft-frame to tilt over on its right-hand drive-wheels by sudden and abrupt motions, but shall tend to insure a square run of the draft-frame upon the ground during the "pitching," or rising and falling motions of the finger-beam, platform, and rake; and thus an even and easy draft for the team be secured. And further, in this connection it is important to have a rake suspended as above stated, in order that it may be applied in connection with a finger-beam

and platform which are hung upon a "double hinge-joint." I
125 mean by a "double hinge joint" that character of connection which allows the cutting apparatus of harvesters to tilt up at its outer end on a hinge located nearly in line with the heel of the finger-beam, and also allows it to rise bodily at both its inner and outer ends on another joint or yielding connection, which is located some distance to the right of said heel of the finger-beam.

It also is further important in making an attachment of a rake to a harvester to have as little obstruction as possible offered by the inner portion of the finger-beam, and by the suspending connections beyond the left-hand drive-wheel and beneath the draft-frame to the grass and other substances which are liable to accumulate and clog the machine; hence the finger beam and cutting apparatus should terminate at or near the left-hand drive-wheel of the draft-frame.

It is also further important in connection with a combined rake and reel mounted upon a hinge-joint cutting apparatus, and also in connection with any rake and with any reel mounted upon such a cutting apparatus, to so apply the endless driving belt, or its equivalent, that it shall not be allowed to become "slack" and slip on its pulleys by reason of the cutting apparatus and rake or the reel rising and falling in conformity with the surface of the ground.

In order that others skilled in the art to which my invention relates may be enabled to fully understand and use the same, I will proceed to describe one practical mode of constructing and using the same; but I do not limit myself strictly to the details of construction herein given.

In the drawings, A represents the draft-frame, consisting in this instance of three longitudinal and two transverse beams, a tongue, an axle, and two supporting-wheels. The left-hand supporting wheel B is made fast on the axle, while the right-hand supporting wheel C is left loose so as to revolve free of the axle. Any well known way of attaching these wheels and controlling them may be adopted.

D is the finger beam and E the platform of the harvester, the cutting apparatus and guard fingers being left off. E is a support for a combined rake and reel. This support is mounted rigidly upon the inner front corner of the platform and heel of the finger-beam, but it
126 may be mounted either wholly on the finger-beam, or wholly on any part of the platform, which is to the left of the left-hand drive-wheel B, or to the right of said drive-wheel if it is a right-hand machine. From the platform or finger-beam the support may extend in an inclined position as high as the top of the draft-frame, and then take a turn over toward the centre of said frame, as represented, so as to form a support for the rake and reel, which shall be somewhat higher than the frame and between the two drive or supporting wheels. The particular shape and height of this support is not very material, so long as the base of it is affixed at some point between the centre of the main frame A and the outer shoe or divider, G. The finger-beam which I adopt does not extend to the right beyond the left-hand drive-wheel B, and the platform is of the quadrant form, with the inner front corner cut away as represented. The particular form of the platform is not very material, but its inner corner should not extend much beyond the left-hand drive-wheel B.

At the upper end of the support F a sweep-rake of the character represented, or of any other suitably constructed, is attached so as to revolve or turn upon its axis. I shall hereinafter particularly describe the rake which I have represented.

The finger-beam, platform, and rake I suspend and stay in the following manner:

On the front transverse beam of the draft-frame at the left of the left-hand drive-wheel B, I construct a swivelling device, *a*, and to this device an inclined draw-bar, *b*, is hinged or jointed as at *c*. This draw-bar is extended back to near the rear end of the draft-frame into the form of a shoe, 20—or a separate inner shoe may be first constructed as a part of the cutting apparatus and this draw-bar connected rigidly to such shoe. In either case the finger-beam and the inner corner of the platform are attached rigidly to the rear part of the draw-bar, as represented.

At a suitable angle to this draw-bar an inclined bar or rod, I, extends from the under side of the right-hand longitudinal beam of the draft-frame to the draw-bar. This bar or rod I is connected at its respective ends to the draft-frame and to the draw-bar by means of joints *d e*, which allow a vertical movement of the finger-beam, platform and rake.

127 The joint connection a is in the same longitudinal path as that of *e*, but is at a different altitude; the joint connection *d* is diagonal to that of *a*, so far as arrangement or location is concerned, but is on about the same level therewith. All these joint connections are, or may be, in a straight line with the "rim" of the machine, although arranged in different paths.

From the inner corner of the finger-beam or platform, or from the metal foot piece 9 of the rake and reel support, by which the support is screwed to and braced on the platform and finger-beam, a strong bracket, 2, is extended beyond the left-hand side beam of the draft-frame. To the extremity of this arm a swinging link or chain, *f*, is loosely connected or jointed as at *g*, and by means of this link or chain the finger-beam, platform, and rake, although arranged at the left of the left-hand drive-wheel B, can be suspended from a point which is to the right of the said left-hand side beam. The suspension is effected by hanging the upper end of the link or chain to the rear beam of the draft-frame, as represented at *h*.

In order to stay the rake a diagonal rod, *i*, is rigidly fixed to the drag-bar *b* and to the rake support F, as represented.

From this description it will be seen that the finger-beam, platform and rake, are entirely suspended and braced by devices which can articulate free of the draft-frame—or, in other words, these parts in articulating do not tilt the draft-frame. The arrangement is also such that the top portion of the draft-frame is not cumbered with the rake support. The arrangement is also such that a well balanced and a very light and cheap automatic raking harvester can be produced. The arrangement, likewise, is such that a short finger-beam, short or narrow platform, and a rake with a short sweep can be adopted, and thus a chance for grass and rubbish to hang upon and clog the machine at a point in rear of the draft-frame is avoided. Much labor of getting the grain off the platform is also saved.

The apparatus which I have represented for getting the grain properly up to the cutting apparatus before it is cut, and off of the platform after it is cut, consists as follows:

128 J is a horizontal crown-wheel with cog teeth on its under side. This wheel has a vertical conic-shaped axle, J^1, projecting from its under face, and said axle is set down into the metal box K, attached to the upper portion of the support F, as represented. The crown-wheel and its axle revolve together—any upward movement being prevented

by the nut *j*, which fastens the wheel to the box K. On the top of the crown-wheel, at equal distances apart, four lugs, *kkkk*, are formed, and horizontally through these lugs round holes are formed, and through these holes two shafts, K^1, crossing each other at right angles and centrally, are passed, as represented, so as to revolve a certain distance. At each end of the respective shafts a circular wheel, *l*, with a toothed segment, *l'*, formed on its circumference is affixed rigidly. Each of these wheels has a stop-pin, *m*, projecting from its inner face over a shoulder, m^1, of the respective lugs *kk* of the crown-wheel, as represented. These pins and stops are so placed that the shafts *kk* can only revolve the length of the toothed segments. From the face of each of the segments an oblique bracket, 3, extends in the manner represented in figures 1, 2, and 3. The bracket at one end of each of the shafts *kk* extends downward in an inclined direction, and that at the other ends of each of the shafts extends upward in an inclined direction, thus forming angles with the shafts *kk*, as shown in figure 2. These brackets are also made to form angles with radial lines through the crown-wheel, as indicated at 5 5 5 5. To one pair of these brackets angular reels L L^1 are rigidly fastened, and to the other pair angular rakes L^2 L^3 are similarly fastened. The respective rakes and reels are arranged with the peculiar obliquity represented so as to more effectively operate upon the standing grain and also remove the cut grain from the platform. It will be observed that they stand oblique to a vertical and also a horizontal plane.

The angular form of the rakes and reels enables me to employ a guide-way which is perpendicular to the top of the platform, as with this form the descent of one of the rakes, or one of the reels of the respective pairs of rakes and reels, necessarily causes an ascent or invertion of the other.

129 In order to produce a proper motion in the rakes and reels the following devices are provided:

M is a stationary segment plate with two concentric sets of cog-teeth d^2 d^3 on its upper face. This plate is cast with or fastened to the box of the support of the rakes and reel in such manner as to partly encircle the crown-wheel J. The toothed segments of the rakes, as shown in figures 1 and 2, take into the smaller segment d^2 of stationary cog teeth, and the toothed segments of the reels take into the larger segment d^3 of stationary cog teeth.

On the segment plate M, I have constructed horizontal ways or guides *n o* for holding up the rakes and the reels on one side of the crown-wheel, while those on the other side are in the acts of reeling in and of raking off the grain. These guides are of just such a length that they set the rakes and reels free on one side of the crown-wheel the moment those on the other side thereof are done with their work and are turned up out of the way of the drive-wheel of the draft-frame. If the stationary teeth of the way M are in line with the way *n*, one of the teeth of the respective segment wheels, in connection with the untoothed portion of said wheels, will serve to hold the rakes or reels of the respective pairs of rakes or reels in proper position. But if the way, as at *o*, is not in the same circle with the teeth, then a hooked-shaped tooth, *p*, and another tooth, *q*, may be formed on the respective segments of the pairs of rakes and reels, and the hooked tooth by passing between flanges *r r*, which terminate at *s*, will answer for preventing the wheel segments turning before they are properly in gear with the teeth of the stationary segment, and as soon as the wheel segments have properly turned the rake and reel of one pair of the rakes or reels, the other

tooth q will rest upon the way o, and hold the rakes or reels from turning until the proper time. Either of the two plans for turning and controlling the rakes and reels may be adopted for the whole series of rakes and reels. In order to produce a rotary motion of the crown-wheel, I arrange two pinions, t t, on a shaft, u, which is supported on the box of the crown-wheel shaft. One of these pinions gears with the crown-wheel and the other with a pinion, v, of a pull'y shaft, w, which is sup-
130 ported on the segment of the box K, as represented. The shaft w carries a pull'y, w^2, and from this pulley an endless belt, N, passes to and around a pair of small pulleys, w^2 w^2, and from thence to a sliding clutch-pulley, w^3, which is on a shaft, w^4, driven by cog-gearing w^5 w^6, the motion being derived from the axle of the draft-frame, as will be evident from the drawings.

In order to insure a positive action of the belt upon the pulleys, I construct the support q of the small pulleys w^2 w^2 in two parts, 8 8, as represented in figure 11, and arrange a spring, o, to act upon the said support in such a manner as to always keep the belt taut. By having the pulley support made in two parts, one of which is cylindric and fits in a cylindric socket of the other part, as shown, the small pulleys are allowed a chance to swivel so as to accommodate themselves to all changes in position which the pulleys w^1 make by reason of the finger-beam, platform, and rake rising and descending. The clutch-pulley is so arranged and made to gear with its shaft by means of a pin, x, ratchet-teeth y, and a spring, z, that it can be thrown in and out of gear at will, and when the machine is backed will cease automatically to gear with its shaft.

The belt tightener described, will be found very useful in connection with all descriptions of reels and rakes which are mounted upon a hinged joint finger-beam, or the platform thereof, and are driven by an endless belt.

In representing a rake and reel combined, I have shown two rakes in the same line and two plain reels in a line with one another, but it is obvious that any even number of rakes and reels may be adopted, or that any number of the plain arms may be provided with teeth, as preference or the nature of the work may dictate, and also that any other equivalent devices to those described for turning up and controlling the arms, may be employed without departing from my invention, as I do not restrict myself to the specific means described for accomplishing the result.

It will be observed that the platform is so suspended at the left of the inner drive-wheel, and also so supported as to be capable of
131 rising and falling to conform with the utmost freedom to the inequalities of the surface of the ground, and, as the standard or support is rigidly mounted upon the platform that the rake and reel are supported in an unchanging position in relation to the platform, and that, too, without any obstruction to the free motion of either.

The mounting of the rake upon the platform or cutting apparatus, causes the former not only to follow the vertical deflections of the latter, but to rise and fall with it as it is elevated and depressed. The correct relation both in height and in angle, is thus maintained between the platform and rake under all conditions, while my mode of suspension is such that there is very little if any tendency to tilt over the draft-frame.

The spring belt tightener is such that it maintains the band at an equal tension in all positions of the pulley, and thus insures a perfect operation of the reel and rakes under all circumstances.

The suspension of the rake and reel with the platform and finger beam, by means of the extension 2, and link or chain, transfers the weight upon the draft-frame in such a manner that the said frame is kept square upon the ground, and besides, this mode of suspension lessens the extent of deflections of the rake, and renders them less sudden and abrupt.

Operation:

If it is desired to cut grass with the machine represented, the rake and platform with the wheel 10, are removed by unscrewing the metal foot piece 9, and detaching the link *f*. This allows the shoe of the draw-bar to rest on the ground in customary manner, while the grain side of the machine rests upon the ordinary supporting shoe, not shown. Thus both ends of the finger-beam are left free to rise and fall, to conform to undulations in the surface of the ground. If it is desired to cut grain, the shoe of the draw-bar and the heel of the finger-beam, and the rake and platform which have been replaced are suspended by the link or chain as represented, and herein described.

The cutting apparatus, which is not represented, may be con-
132 structed and operated in any known and suitable way. As the rake head or crown-wheel receives its continuous rotary motion from the endless belt, the respective pairs of reels and rakes are carried along with it, and during their circuit they are caused to assume the different positions represented in figures 1, 2, and 7, by the combined agency of their form, the segment wheels and segment plate.

As each reel approaches the rear of the main frame its cogged segment *t* takes into the cogs d^3, turning the reel backward and upward, completely above the drive-wheels of the draft-frame, and causing the reel which is attached in front to the same shaft k' to descend at the left side of the drive-wheel where it operates to present and hold the standing grain to the action of the cutters, and so passes over the platform. By the time this last reel reaches the point to be elevated above the left-hand drive-wheel, the first mentioned reel has advanced so far as to pass off the way *o*, and descend clear of the said drive-wheel, and so the work of reeling progresses. In like manner the rakes operate first as reels, and each passing backward in contact with the platform, removes therefrom all the grain which has collected and deposits it in a gavel upon the ground. On passing off the platform the rake is held and guided, after being turned up by the segment wheel *t* and the way *n*, until its fellow rake has finished its work. With the present arrangement, when the acting reel has passed off the platform, it is held and guided by its tooth *p*, passing between the flanges *r r s*, and its cog segment t' is thereby presented in correct position to the cogs d^3, by means of which it is elevated as above described. The elevated reel is sustained by the tooth *q*, resting upon the way *o* which it has passed around sufficiently far to clear said way and descend clear of the wheel B, when the tooth *q* leaves the way *o*, and the reel is carried down by the ascend of its fellow reel.

In describing the location of my rake, or reel and rake com-
133 bined, I have used the terms "right" and "left," simply in order to make myself understand as to what relation with respect to the grain side of the harvester the rake, or reel and rake combined, is to occupy. I wish to be distinctly understood that I do not confine my invention to a left-hand machine, as the rake, or rake and reel combined, if placed on the right-hand side of the machine in just the same location that it occupies on the left-hand side thereof, will operate in the same manner with the same results.

What I claim as my invention, and desire to secure by letters patent, is:

1st. A sweep-rake, which is mounted upon the heel of the finger-beam proper, or upon the inner front corner of the platform of a harvester, which has its cutting apparatus and platform hinged to the draft-frame, all in such manner that the rake-arm sweeps the platform from front to inner side, and maintains a correct position in relation to the finger-beam and platform during the rising or falling movements thereof on the joint or joints by which the finger-beam is connected to the draft-frame, substantially as set forth.

2d. A rake, rotating upon an axis which is perpendicular to the top surface of the platform, or nearly so, and having its arms successively turned up, substantially as and for the purpose described.

3rd. The angular rake-arms, rotated independently of the axis *f*, and controlled substantially as described, in combination with a guide-way, which is perpendicular, or nearly so, to the said axis *f* of the rake-head, substantially as and for the purpose described.

4th. Elevating and depressing revolving rake and reel arms, by means substantially as described, whereby I am enabled to dispense with an incline plane or cam-way, as set forth.

5th. An inclined standard or support, F, or its equivalent, rigidly mounted upon a loosely hinged platform or finger-beam, and adapted for supporting a sweep-rake in an unchanging position in relation
134 to said platform without obstructing the free motion of the platform or finger-beam, substantially as described and shown.

6th. A standard or support, F, which sustains the sweep-rake above the draft-frame or driving-wheel thereof, said standard being mounted directly and wholly upon a hinged finger-beam, or the platform thereof, substantially as described, and for the purpose set forth.

7th. A revolving toothed-head or crown-wheel J, constructed with supports for rake and reel-arms in pairs, said supports being arranged outside and around the axis of said wheel J, substantially as and for the purpose described.

8th. In a harvesting machine which has its cutting apparatus hinged or jointed to the main frame in such manner as to allow it to conform at both ends to the undulations of the ground, and a rake mounted upon the said jointed cutting apparatus, or upon the platform thereof. I claim so constructing and arranging the several parts, that the support of the rake can occupy a position outside of the inner drive-wheel B, or a position which is between the point of suspension *h* and the outer divider G, and can also be hung or be suspended below the draft-frame, substantially as described.

9th. Effecting a combination of a rake and reel, located substantially as described, and a finger-beam and platform with the main frame by means of a hinged draw-bar, *b*, and hinged brace, I, a hinged suspender, *f*, and an extension bracket, 2, or their equivalents, substantially as and for the purposes described.

10th. The combination of a rake and reel, a yielding draw-bar, *b*, inner shoe of the cutting apparatus, and hinge-joint *e* on the draw-bar, substantially as and for the purpose described.

11th. Preventing a too sudden or abrupt deflection of a rake and reel mounted upon a hinged-joint cutting apparatus, by carrying the point of suspension beyond the rake-support toward the centre of the draft-frame, by means substantially as described.

12th. A continuously-revolving rake, which is mounted directly
135 and wholly upon the platform or finger-beam, so as to rise and

fall therewith independently of the draft-frame when said rake is located between the centre of the draft-frame and the outer divider, and passes in at the front of the machine upon the platform and sweeps around to the inner side of the platform, substantially as described.

13th. The combination with a doubled hinged joint combined reaping and mowing machine, of a sweep-rake which enters at the front of the machine upon the platform, in such manner that the rake and cutting apparatus rise and fall together while reaping, and also in such manner that the rake and platform may be readily removed and the cutting apparatus at its inner and outer ends allowed to float upon the ground and to accommodate itself at both ends to the undulations of the ground, substantially in the manner described.

14th. The combination of a suspended hinge-joint cutting apparatus of harvesters, and a combined rake and reel, which is mounted directly and wholly upon the suspended platform or hinged finger-beam, substantially as and for the purpose described.

15th. Controlling the rake and reel arms by an upper and lower guide, between which an attachment of the respective rake and reel arms passes, substantially as described.

16th. The combination of a combined rake and reel, mounted upon a hinge-joint cutting apparatus, and a yielding belt tight'ner, substantially as and for the purpose described.

17th. The employment of a yielding belt or chain tightener, or its equivalent, in connection with harvesters which are constructed with a hinged-joint cutting apparatus, substantially as and for the purpose described.

18th. The pulley support Q, with its pulleys w^2 W^2, in combination with a band or chain N and pulleys W^1 W^3, substantially as and for the purpose set forth.

136 19th. Providing in a harvester with the rake attached to its hinged finger-beam or platform, an extensible means for driving the rake, which will permit the platform and rake to rise and fall together, and accommodate themselves independently of the draft-frame to the undulations of the ground, substantially as described and for the purpose set forth.

REUBEN HOFFHEINS.

Witnesses:
OCTAVIUS KNIGHT,
CHARLES SMITH.

137 Reissue No. 2224.

United States of America to all to whom these letters patents shall come:

Whereas Reuben Hoffheins, of Dover, Pennsylvania, has alleged that he has invented a new and useful improvement in harvesters (for which letters patent were issued to him dated May 20, 1862, the same surrendered, and new letters ordered to issue to him on an amended specification), which he states has not been known or used before his application; has made oath that he is a citizen of the United States; that he does verily believe that he is the original and first inventor or discoverer of the said improvement, and that the same hath not, to the best of his knowledge and belief, been previously known or used; has paid into the Treasury of the United States the sum of thirty dollars, and presented a petition to the Commissioner of Patents, praying that a patent may be issued therefor:

These are therefore, to grant according to law, to the said Reuben Hoffheins, his heirs, administrators, or assigns, for the term of seventeen years from the twentieth day of May, one thousand eight hundred and sixty-two, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the schedule hereunto annexed and made a part of these presents.

In testimony whereof I have caused these letters to be made patent, and the seal of the Patent Office to be hereunto affixed.

Given under my hand, at the city of Washington, this tenth day of April, in the year of our Lord one thousand eight hunded and sixty-six, and of the Independence of the United States of America the ninetieth.

W. T. OTTO,
Acting Secretary of the Interior.

Countersigned and sealed with the seal of the Patent Office.
[L. S.]
T. C. THEAKER,
Commissioner of Patents.

138 [65.]

The United States Patent Office to all persons to whom these presents shall come, greeting:

This is to certify that the annexed is a true copy from the records of this office of the reissued letters patent granted Reuben Hoffheins, dated April 10, 1866, No. 2224, for "improvement in harvesters."

In testimony whereof I, Ellis Spear, Acting Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this ninth day of January, in the year of our Lord one thousand eight hundred and seventy-five, and of the Independence of the United States the ninety-ninth.

[SEAL.]
ELLIS SPEAR,
Acting Commissioner.

139 UNITED STATES PATENT OFFICE.

Reuben Hoffheins, of Dover, Pennsylvania. Letters patent No. 40481, dated November 3, 1863; reissue No. 2102, dated November 7, 1865; reissue No. 2490, dated February 19, 1867. Improvement in harvesters.

The schedule referred to in these letters patent and making part of the same.

To all whom it may concern:

Be it known that I, Reuben Hoffheins, of Dover, in the county of York and State of Pennsylvania, have invented a new and useful improvement in combined harvester and rake, and I do hereby declare the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, and in which—

Figure 1 is a front perspective view of my improved machine as arranged for cutting grain.

Figure 2 is a rear perspective view of the same in the form of a mower.

Figure 3 is a side view of the same as arranged for transportation.

Figure 4 is a perspective view of the main frame detached.

Figure 5 is a plan of the top of the post on which the rake is mounted.

140 Similar letters of reference in the several figures indicate corresponding parts.

The invention embraced under this patent relates to the mode of combining a raking apparatus with a harvester.

My first improvement consists in the combination, in a two-wheeled hinged-joint machine, of a driver's seat mounted upon the main frame, with a raking mechanism mounted upon the finger-beam, and rotating on a vertical axis, or one nearly so, substantially as hereinafter described, for the purpose of enabling the driver to ride upon the machine while the rake is in operation.

My second improvement consists in the combination, in a two-wheeled machine, of a shoe, with a finger-beam jointed in it, a rake standard and platform, with an extension, J^1, and a draught or main frame, which sustains the weight of cutting apparatus and raking apparatus, with platform attached, at a point between the two drive-wheels.

My third improvement consists in the combination of the jointed finger-beam, inner shoe, and raking apparatus, as hereinafter explained.

My fourth improvement consists in the combination of the revolving or turning rake, extensible tumbling-shaft and driving-shaft of the draught-frame, in the manner hereinafter explained.

To enable other' skilled in the art to make and use my invention, I will proceed to describe the construction and operation of the same, but in doing so I wish it to be distinctly understood that I do not confine myself to the construction of the draught-frame, nor to any particular construction of the raking apparatus, but desire to include any style of double-wheeled hinged-joint machine, and any style of revolving rake, in combination with a seat upon the main frame, so long as the principle of operation is substantially the same as hereinafter set forth.

The main frame A A, represented in Fig. 4, is cast in one piece in
141 the form represented, the ends being left disconnected to facilitate moulding and to reduce the weight. B B^1 are two driving or supporting wheels, adapted to turn on the axle C, but each, if desired, furnished with a pawl, b, taking into a ratchet, b^1, on the axle, so as to impart rotation thereto when the wheel is turning forward. b^2 is a spring, bearing against the square wheel of the pawl b, to hold it either in or out of gear, whichever position it may be set. C^1 is the main gear-wheel on the axle C, which gears with a pinion, d, on the transverse shaft D, which carries at its other end a bevel cog-wheel, D^1, gearing with a bevel pinion, e, on the crank-shaft E. E^1 is the crank-wheel, mounted on the rear end of the shaft E, and imparting motion to the cutter F by means of a pitman, f, which is provided with a swivel, f^1, formed of a screw-thread and nut, to permit the rolling of the finger-beam without straining or binding the cutter. a represents a flange cast upon the main frame for the purpose of imparting additional strength thereto, and also protecting the crank-shaft E. G is the finger-beam, attached at its respective ends to the inner shoe, H, and the outer shoe or driver, H^1. The inner shoe, H, is pivoted by its centre at h to the drag-bar I by a universal joint, and at its respective ends to guide h^1 h^1, which work in

vertical dovetail slots formed in pendants *i i* on the drag-bar in such manner as to brace the beam horizontally, while permitting it to turn freely on its axis, either for the purpose of conforming to the undulations of the ground, to rise over obstructions, or to be turned up edgewise and carried on the machine in manner as represented in Fig. 3, the point of the divider H^1 resting in a staple in the side of the tongue K. The tongue is attached to the main frame by means of two bolts, k^1, passing through it, and through notches or holes *j j* or j^1 j^1 at one side of, or near the centre of, the frame, so as to permit the adjustment of the said tongue to a position between the wheels for cutting grain, as illustrated in Fig. 1, or on the outside of the outer wheel, B^1, for cutting grass, as illustrated in Fig. 2. In either position an extension, K, from the tongue affords a means for supporting the inner end of the finger-beam.

142 This is effected in the illustration given in Fig. 1 by a chain, J, rising from the extreme end of a rigid arm, J^1, which projects inward from the finger-beam or platform, and in the illustration shown in Fig. 2 by a chain, J^2, attached at its lower end to a staple, *h*, in the lateral stay-rod H^2, and at its upper end to a segment lever, M, fulcrumed at *m*, on the rear end of the tongue, so that by raising the said lever the heel of the beam may be raised to any required height. A rack, M^2, holds the lever M in any position in which it may be placed. H^3 represents a track-clearer pivoted in front to the rear of the divider or outer shoe, H^1. On the rear of the inner shoe, H, is formed a lug, *h*, for the attachment of the inner corner of the segmental platform P. The said platform is secured to the finger-beam at suitable intervals by straps O and bolts o^1. N represents a caster-wheel, secured adjustably to the outer edge of the platform, and employed to carry the same at any decided height. Q represents a grain-fender, pivoted in front upon the divider H, and adjustable in height at the rear end by a bolt placed in either of the holes *q*. On the inner side of the grain platform, near the heel of the finger-beam, is firmly mounted a post, R, which may incline over toward the main frame, as shown in Fig. 1. The said post is braced by stay-rods *r r r*, the respective lower-ends of which may be bolted to the platform, the front of the shoe H, and the outer end of the rigid arm J^1, so as to secure the post in rigid connection with the platform and cause it to follow all the motions of the latter. The post R is provided at its upper end with a cogged segment, S, and a segmental guide-way, S^1 (see Fig. 5), by which the revolving rakes are turned and held in the required positions, as will be presently explained. T is an inverted crown-wheel, provided with a vertical shaft, which is journalled in a box on the upper part of the post R. Rotation is communicated to the crown-wheel T by an extensible tumbling shaft, U U, of square form, made in two parts, sliding one within the other, so as to assume any length which the positions of the parts may require, and work equally well in any position.

143 The said extensible tumbling shaft is connected at its respective ends by universal joints to pinions u^1 u^2, the first, u^1, mounted upon the main frame, and gearing with a pinion, w^3, on the axle C, and the second, u^2, mounted on the post R, and gearing with the crown-wheel T. The rake or reel arms V V^1 are mounted in pairs upon the ends of horizontal shafts *v* v^1, journalled at right angles across the top or back of the inverted crown-wheel T. The rake-arms form an angle with the shaft *v*, the inclination of one arm of each pair being just in a converse direction of the other, so that when one rake or reel arm is over and down close to the platform the other will be at a very

high position on the inner side of the machine. By this means the rake and reel arms will stand high enough above the draught-frame, on the inner side of the machine, to move clear of the driver, who sits upon the machine in a seat, W, which is mounted upon the main frame, as shown, or in any other position on the frame that will give the greatest convenience and advantage from his weight and use of his hands in the management of the machine. At the junction of each of the rake or reel arms with the shafts v v^1 is secured a cog segment, v^2, adapted to gear with the fixed cogged segment S, and in passing over the same to turn the reel or rake on that side of its inverted and elevated position; in which position it is held during about one-fourth of its revolution by a rigid arm, v^3, resting on the segmental guide-way S^1; and it will be apparent that the corresponding reel or rake arm, being rigidly secured to the opposite end of the same shaft, will be held in its lower or working position during the same period.

From the foregoing description it will be seen that my invention enables me to combine in a self-raking harvester all the advantages derived from the two-wheeled hinged-joint machine, and still use a rake that turns about an axis, or revolves entirely around the same, and at the same time have the driver or manager ride upon the main or draught-frame in such a position that his weight may aid in counterbal-
144 ancing the weight of the rake and platform, and his hands may be conveniently employed for controlling the machine. The use of the rigid arm J^1, projecting from the finger-beam or platform, and supporting the finger-beam, platform, and rake from the rear of the tongue at a point between the drive-wheels, diminishes the abruptness of the motions of the cutting apparatus, platform, and rake, without restricting their freedom in conforming to undulations of the ground. This is the result while cutting grain with the machine, as shown in Fig. 1. The peculiar devices for transmitting motion to the rake adapt it to act equally well at any height or angle of the platform. The peculiar construction and attachment of the inner shoe adapt the finger-beam to roll freely on its axis in use, or to be turned over on its edge, and folded compactly against the frame, as illustrated in Fig. 3, to adapt the machine to be moved from place to place. The pawl or ratchet connection between the driving-wheels and their axle adapts the machine to be turned or backed with perfect freedom, and also affords ready means for throwing the entire machinery out of gear, which is effected by raising the pawls out of the ratchets, where they will be held by the springs b^2. I would here remark that any well-known style of two-wheeled draught-frame adapted to the purpose herein set forth may be used.

The operation is as follows: For cutting grain the parts are arranged as shown in Fig. 1. The successive rake and reel arms descending (as the machine moves forward) in front of the finger-beam, deflect the grain backward toward the cutters in the customary manner, and the rakes remove the cut grain in compact gavels from the platform and deposit it out of the return path of the horses. In mowing, the platform and reel are removed, and the cutter is left perfectly free, being suspended on a chain, by which it is raised and lowered through a lever, as before explained, the tongue being transferred to a position on the outside of the wheel B^1 for the purpose of making the machine operate as a mower to better advantage. The cutting apparatus may be
145 thrown out of gear by moving the transverse shaft D longitudinally by lever D^2, and providing it with a pin, d^2, which, in one position of the shaft, will fit a recess in the hub of the wheel, so as to

impart rotation thereto, and in the other position will permit the shaft to turn independently of the wheel. This lever may be moved by the hand or foot of the driver.

Having thus described my invention, what I claim as new under this patent is—

1. The combination, in a two-wheeled hinged-joint machine, of a driver's seat mounted upon the main frame, with a raking mechanism mounted upon the finger-beam, and rotating around a vertical axis, or one nearly so, substantially in the manner described, for the purpose of enabling the driver to ride on the machine while the rake is in operation.

2. The combination, in a two-wheeled hinged-joint machine, of a shoe with a hinged joint in it with a rake and platform having an extension, J^2, and with a draught-frame which sustains the weight of the cutting apparatus and raking apparatus, with platform attached at a point between the two drive-wheels.

3. The combination with the hinged-joint machine of the inner shoe and raking apparatus, substantially as described.

4. The combination of a revolving or turning rake, extensible tumbling-shaft and driving-shaft, or axle of the main frame, substantially as described.

5. The combination of a two-wheeled hinged-joint machine, a revolving raking apparatus, and a driver's seat mounted on the main frame, substantially as described, and for the purpose set forth.

6. I claim driving a revolving rake, or a combined revolving rake and reel, which move about a vertical, or nearly vertical, axis, by a device arranged on the grain side of the inner drive-wheel or inner side of the draught-frame.

7. Making a direct driving connection between a revolving rake, or a combined rake and wheel, which move about a vertical,
146 or nearly vertical, axis, and the inner end of the main frame axle of the draught frame.

8. Employing a tumbling-shaft, on the inner side of the draught-frame, for driving a revolving rake, or a revolving rake and wheel, which is mounted on a hinged finger-beam or upon the platform.

9. The combination of a quadrant platform, hinged finger-beam, revolving rake, and a driver's seat supported by the main frame.

R. HOFFHEINS.

Witnesses:
R. T. CAMPBELL.
EDW. SCHAFER.

147 Reissue No. 2490.

United States of America. To all to whom these letters patent shall come:

Whereas Reuben Hoffheins, of Dover, Pennsylvania, has alleged that he has invented a new and useful improvement in harvesters (for which letters patent were issued to him, dated Nov. 3, 1863, the same surrendered and new letters issued to him, dated Nov. 7, 1865, which last letters have been surrendered by him, the same have been cancelled and new letters ordered to issue to him on an amended specification), which he states has not been known or used before such invention; has made oath that he is a citizen of the United States; that he does verily believe that he is the original and first inventor or

discoverer of the said improvement, and that the same hath not, to the best of his knowledge and belief, been previously known or used; has paid into the Treasury of the United States the sum of thirty dollars, and presented a petition to the Commissioner of Patents, praying that a patent may be issued therefor:

These are, therefore, to grant, according to law, to the said Reuben Hoffheins, his heirs, administrators, or assigns, for the term of seventeen years from the third day of November, one thousand eight hundred and sixty-three, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used the said improvement; a description whereof is given in the schedule hereunto annexed, and made a part of these presents.

In testimony whereof I have caused these letters to be made patent and the seal of the Patent Office to be hereunto affixed.

Given under my hand, at the city of Washington, this nineteenth day of February, in the year of our Lord one thousand eight hundred and sixty-seven, and of the Independence of the United States of America the ninety-first.

W. T. OTTO,
Acting Secretary of the Interior.

Countersigned and sealed with the seal of the Patent Office.
[L. S.]
T. C. THEAKER,
Commissioner of Patents.

148 [65.]

The United States Patent Office to all persons to whom these presents shall come, greeting:

This is to certify that the annexed is a true copy from the records of this office of the reissued letters patent granted Reuben Hoffheins, dated February 19th, 1867, No. 2490, for "improvement in harvesters."

In testimony whereof I, Ellis Spear, Acting Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this ninth day of January, in the year of our Lord one thousand eight hundred and seventy-five, and of the Independence of the United States the ninety-ninth.

[SEAL.]
ELLIS SPEAR,
Acting Commissioner.

149 Circuit court of the United States, northern district of Ohio.

REUBEN HOFFHEINS ET AL.
versus
C. RUSSELL & CO. ET AL.
} In equity.

Depositions of witnesses and other evidence taken, pursuant to agreement of counsel, before me, R. H. Whittlesey, notary public, acting as special examiner, at the office of George H. Christy, 126 Fourth avenue, Pittsburgh, Pa., commencing on Tuesday, May 14th, 1878, at 10 o'clock, a. m., and continuing by adjournment as hereinafter noted.

Present, George H. Christy for complainants, also John B. Bennett, esq., of counsel for defendants.

REUBEN HOFFHEINS, a witness produced on behalf of complain-

ants, being duly sworn, in answer to interrogatories propounded by George H. Christy, deposes and says:

Int. 1. State your name, age, residence, and occupation?

Ans. Reuben Hoffheins; age, 48; residence, York, Pa.; by occupation, at present, a farmer.

Int. 2. Are you one of the complainants in this case, and are
150 you the patentee named in the patents for infringement of which this suit is brought?

Ans. Yes, sir.

Int. 3. Were you ever engaged in the manufacture and sale of agricultural implements; and, if so, when and where did you carry on that business?

Ans. I was. I commenced in Dover, York Co., Pa., about 1850–'51; I carried on that business there until the winter of 1864–'5. I sold out my manufacturing interests there and commenced the same in York, Pa., the latter part of 1865 and the beginning of 1866.

Int. 4. While carrying on at Dover, did you at any time manufacture and sell harvesting machines; and, if so, when did you commence?

Ans. I commenced in 1859; may have made some preparations the latter part of 1858.

Int. 5. Did you carry on this work only as a part of your manufacturing business, or did you confine your attention wholly to harvesters?

Ans. I was manufacturing threshing machines, corn-planters, and corn-shellers, and on general repairing of agricultural implements, as well as harvesters.

Int. 6. What machine was it you commenced building in 1859, and how did you come out on it?

Ans. It was a machine I got up myself; commenced twelve machines, finished about eight or nine, gave them out on trial, they were an entire failure, and all came back on my hands.

Int. 7. What machine did you commence on next, and when?

(Objected to.)

Ans. I commenced on the "Ball" machine next. I got the sample machine the latter part of September or beginning of October, 1859.

Int. 8. How did you come out on that machine?

(Objected to, immaterial.)

Ans. I sold between thirty and forty; they worked well as a
151 mower, but the reel was a failure and I had to change all the machines; put new reels on them.

Int. 9. What change did you make in connection with the new reels?

(Objected to.)

Ans. I located the inner reel-post on the drag-bar and run the reel-chain from the reel-wheel which was fastened to the main shaft of the machine on the grain side of the main frame; the chain was taken forward, run through two pulleys, fastened to the front cross-piece of the main frame by a spring and swivel, then the chain run up to the pulley fastened to the end of the reel-shaft. I might say this change was made on one machine and the machine tried in oats in 1860.

Int. 10. Please describe that "Ball" machine and its general features.

(Objected to.)

Ans. It was a two-wheel machine with a wooden frame to carry the gearing to drive the cutters; the tongue was rigidly attached to the front cross-piece of the main frame; the cutting apparatus was hinged

to the main frame by a drag-bar being hinged to the front cross-piece on the grain side of the machine; this bar ran back to the rear end of the machine; the inner shoe had a cross hinge to give it a rolling motion; a stay bar was hinged to the shoe at one end and the other end was hinged to the main frame or to a casting attached to the main frame near the rear outer corner; these hinges gave the cutting apparatus a flexible connection to accommodate itself to the undulations of the ground independent of the main frame. It had a square platform, or one nearly so, attached to the rear of the cutting-bar, the cutting-bar being suspended on the grain side of the machine by a chain; a raker seat was placed on the rear end of the main frame with the platform suspended below the main frame at the rear of the machine for the raker to rest his feet, he having to ride backwards and rake the grain off sideways in rear of the main frame.

Int. 11. What led you to make the invention of your self-rake,
152 described in your original patent of May 20th, 1862, and in reissue No. 2224?

(Objected to.)

Ans. J. & P. Flickinger, of Hanover, Penn'a, were building the "Dorsey" self-rake at that time, and I found quite a demand for self-rakes, and found that all manufacturers would have to get to it or lose some of their customers.

Int. 12. How many drive-wheels did this Dorsey machine have at that time?

(Objected to.)

A. It had but one driving-wheel, and the cutting-bar and platform were rigidly connected to the main frame, and the rake and its support was located on the main frame.

Int. 13. When and where did you first make a practical trial of your new self-raking harvester? State the circumstances connected with the trial as you now remember them.

(Objected to.)

Ans. My first self-raking reaper was tried in green rye in William Lenhart's field, as near as I can recollect, the beginning of June, 1861. We cut, I think, two rounds. The machine worked well. It was brought back to the shop, and from there it was sent to York to the Molter House; was set up there in the yard as a sample machine to show to farmers.

Int. 14. Please describe that machine as it was then constructed and tried.

Ans. I took the "Ball" mower, which was a two-wheeled hinged-bar machine, as described in my answer to interrogatory 10, and located a post on the inner shoe of the cutting apparatus. The machine had two driving-wheels and such other parts as described in my answer to interrogatory 10. I might say I took the "Ball" mower and attached a quadrant platform in rear of the cutting-bar. I bolted a metal foot-piece to the same bolts that fastened the cutting-bar to the inner shoe. That metal piece extended inward towards the centre of the machine inside of the rear driving-wheel. A chain was attached to the
153 end of that extended arm, which was hung to a hook fastened to the main frame between the two driving-wheels. The post was located or fastened to this metal piece on top of the inner shoe. That post was from three and a half to four feet high, to the best of my recollection, on top of which I placed a revolving rake, such as described in my patent granted May 20th, 1862. I placed a seat on the front right-hand corner of the main frame. This was a left-hand ma-

chine. The rake passed over the driver's head, and the driver had plenty of room to ride on the machine without being struck by the rake. I had various driving mechanisms in my experimenting. I think my first driving mechanism was a chain on the grain side of the machine; but the machine used in green rye, and all machines built in 1861, had an extensible tumbling shaft located between the two driving-wheels. The rake mechanism on top of the rake-post was about the same construction or had the same motion shown in my patents granted May 20th, 1862, and November 3d, 1863; that is, it was a continuously revolving rake, entered the standing grain before it was cut, and acted as a reel in pressing the grain towards the cutters and then swept the grain off the platform in rear of the machine and out of the way far enough from the standing grain for the horses to pass in cutting the next swath.

Int. 15. Look at the model now shown you, marked "Complainants' Exhibit No. 61," and state how that compares in construction with your self-raker as you tried it in the green rye in 1861?

Ans. To the best of my recollection, it is identical with that machine in its construction. I think the rake-post on the machine was a little higher in proportion than on the model, and my impression is now that the seat was a fraction farther to the right-hand corner; that is, the spring was far enough out to get outside of the wheel; there may have been a space of a half inch or an inch between the spring and the wheel. The sprocket wheel on outer end of the main shaft, which is placed on this model to show how the machine was built in 1862, was not on the machine tried in the green rye, nor on any of the 1861 machines.

Int. 16. Can you produce any old documents going to show, or
154 from which you can testify as to the earlier dates connected with the making of this invention? If so, please do so, give the dates thereof, state what they are, and read therefrom such parts as have a bearing on that matter.

(Objected to as not calling for best evidence.)

Ans. I find a letter from Samuel Leonard, of Oakland Mills, Juniata Co., Penna., dated January 23d, 1860, written to me, in which he says: "Tell me by return mail, and you say you think a hundred and seventy-five dollars with rake; will your rake work well, and whose patent is it, and whether it is easy to take off and put on, or whether you can regulate the rize of the sheaf?"

I find another letter from Mr. Leonard to me, dated February 9th, 1860, in which he says: "Now, as regards your raker-off, they asked me will it do well and what is your lowest price for it."

I find another letter from Mr. Leonard to me, dated May 19th, 1860, in which he says: "I think I did not mention to you anything about the self-rakers. Manny's agent with Woods' improvement are getting machines on that has a self-raker attached; he says he can sell them for one hundred and fifty dollars, so he tells me, and will do well; he says for ten dollars he can put it to any of their old machines. I don't know whose patent the rake is, nor he says he don't know. Now, I want you to tell me whose patent your raker is, and how you are succeeding with it, and what would a reaper actually cost; put it as low as you can with the raker on. I want to know, as near as you can tell, how you think it will do, for I would like to not let them get ahead of me if I can. Did you ever look at the "Dorsey" raker? I think they are the cheapest that is made; how well they will work I can't tell; he sells them for one hundred and sixty dollars with the raker attached; that is the 'Jersey Blue' reaper; then it needs no reel. Let me hear

from you soon, if you please, how you are succeeding with the raker, at any rate."

I find another letter, dated June 1st, 1860, in which he says: "I want you to tell me, when you make your self-raker can you attach it to one of these reapers now made, easy or not?"

155 I have another letter from the same man to me, dated December 1st, 1860, in which he says, "Now, as regards Musser, he was at my house last week; he has paid me all but ten dollars, he holds that till other arrangements; he thinks he will be through there by Christmas; you know how to use him; he has a notion to have a self-raker attached, and for you not to make the other platform till he sees you, or I let you know, as he thinks his platform that he has would do for the raker and he wants to see some Dutchman that has used one, so if it pleases him there will be more pleased."

(Letters above referred to are offered in evidence and marked Complainants' Exhibits Nos. 1, 2, 3, 4, and 5, respectively.—R. H. W., notary public. Objection made to being received in evidence.)

Int. 17. I call your attention to another allusion to "the self-raker" in Leonard's letter of June 23d, 1860; please read and enter on the record the extract from the letter referring to it.

(Objected to.)

Ans. It read as follows: "A good machine will carry the day any time if high price, ahead of poor one and low price; I want you to send one that I can put the self-raker on afterwards if wanted, or suppose you would send a raker along; have you the reel and rake on both at once, or not?"

Int. 18. How long have these letters been in your possession?

Ans. For a good many years; ever since I received them; they have not been out of my possession.

Int. 19. Do you know Mr. Leonard's handwriting; and, if so, are these letters in his handwriting?

Ans. I do know his handwriting, and those letters are in his handwriting.

Int. 20. What business connection did Mr. Leonard have with you at the time these letters were written in 1860?

Ans. He was acting as agent for me, selling reaping machines.

Int. 21. Are these letters a part of the regular business correspondence which took place between you and him at that time?

Ans. Yes, sir.

156 Int. 22. Have you the letters which you wrote to Leonard at that time or any copies of them, and which constituted a part of the same correspondence or to which these are answers?

Ans. I have not; I never kept copies of my letters; I wrote to Leonard to get them, but he did not preserve his letters, he told me.

Int. 23. Then, so far as you know or can ascertain, your letters to Leonard of that year cannot be found; is that right?

Ans. Yes, sir.

Int. 24. What can you say as to whether or not these Leonard letters were written at or about the time they bear date?

(Objected to.)

Ans. They must have been written about that time, as I selected them out of my correspondence a good many years ago, and have kept them separate ever since.

Int. 25. Have you any reason to believe that the dates on them are wrong, or that they were written afterwards?

Ans. No, sir; I am fully satisfied in my own mind that they were

written about that time, as there were some money transactions I know occurred about that time.

Int. 26. Do you mean money transactions referred to in the letters?

(Objected to.)

Ans. Yes, sir.

Int. 27. From those Leonard letters in connection with your own recollection, what, if anything, can you say as to your conception of the invention of the self-raker in the early part of 1860, or at the date of the earliest of these letters?

(Objected to.)

Ans. From my own recollection, I think my invention would go further back, but this is the only written evidence I have to fix a date. My recollection is that I had made explanations to a few confidential friends, being cautious to keep it as much to myself as possible, how I was going to construct my rake, Mr. Leonard being one of them; and the only plan I ever could see to put a self-rake on a hinged bar

157 machine was to locate the rake on a platform and drive it by a flexible mechanism. My first idea was to run it the same as the reel was run in my 1860 machine, before described, and so constructed the first machine, but afterwards adopted the sliding tumbling shaft, as shown in "Complainants' Exhibit, No. 61." I recollect very well that I used to set a nail keg on the inner front corner of the platform, and used that as a post; I had nails drove in on the outside to form the segment now shown on top of the reel post; I laid part of a broom handle, cut short, over the nail keg, in which I drove nails to form the circular segments now shown on the cross-shaft in "Complainants' Exhibit, No. 61," thereby experimenting how to raise my rig out of the grain after the gavel was discharged to raise it and pass it over the machine to descend into the grain in front of the cutting-bar.

Int. 28. Did you put any other parts of the rig on to the ends of the piece of the broom handle?

(Objected to.)

Ans. I had the rake-arms on to which the rakes are attached. I couldn't tell positive whether I had rakes on or not.

Int. 29. How early did you commence such nail-keg experiments? or, if you cannot fix the date, state whether it was among your earliest or later operations?

(Objected to.)

Ans. I cannot fix a positive date; it must have been in the early part of 1860; probably in the latter part of 1859.

Int. 30. Are you clear in your recollection that the plan of a rake-post mounted on the inner front corner of the hinged platform and carrying revolving rakes was what was spoken about in your correspondence with Leonard as the "self-raker," "the raker" and "the rake;" I mean the Leonard letters of 1860?

(Objected to as assuming, also leading.)

Ans. I could not tell how much I described to Leonard as I was not able to get the letters I wrote to Leonard; he didn't keep them; I tried to get them; but I am fully satisfied that locating the post on the platform or finger-beam was the plan I started out on to construct my rake.

158 Int. 31. Are you clear in your recollection that that was the only plan you had in mind at the time of your correspondence with Leonard?

(Objected to.)

Ans. It is the only plan I had at any time before, or after, or at that

time. It was no trouble for me to get at that plan, the most trouble was whether I should use a chain or a shaft to run the rake.

Int. 32. Did you have any trouble in giving to the rakes the proper motion?

(Objected to.)

Ans. I think I had some; to get the rake in at the right place to divide the grain before it is cut and get the proper distance to carry it level over the platform and left at the proper time to discharge the gavel.

Int. 33. In your earliest plan, or conception, of putting the rake-post on the platform, what kind of a platform did you propose to mount it on, and where and on what part?

(Objected to as leading.)

Ans. A quadrant-shaped platform, and the inner front corner of the platform.

Int. 34. A hinged or rigid platform; which, if either?

(Same objection.)

Ans. A hinged platform, as I never built or attempted to build any other machines.

Int. 35. What else, if anything, did you do along in 1860 by way of working out or perfecting your plan of a self-raker?

(Objected to.)

Ans. I didn't do much in the early part of 1860, as I hadn't much time; I was running from ten to fifteen hands, and acted as my own foreman, kept my own books, done the greater part of my own collecting, and done the hauling, or the greater part of the hauling of my material, as I was seven or eight miles away from the railroad. What experimenting I done I had to do between times.

159 Int. 36. Can you describe any experiments you made between times, or do you remember of any sketches or drawings you made in 1860?

(Objected to.)

Ans. Not in the fore part of 1860, any more than I have related about that "nail keg" experiment. As we started in to build a lot of hand machines, the 1859 machines being an entire failure, we had to get new patterns to build the "Ball" hand-raking machine. The failure of the 1859 machines being a dead loss to me, as I had commenced with very little money, and was trying to get a machine in the field to realize some money out of it, and didn't do what I would have done if I had the funds to go on.

Int. 37. How many of your self-raking machines did you build for the harvest of 1861? I mean machines like Exhibit Model No. 61.

(Objected to.)

Ans. I think we finished six or eight.

Int. 38. When were these machines commenced, and how rapidly were they completed?

Ans. The first quadrant platform, to the best of my recollection, was built in the harvest or right after the harvest of 1860, and from that time on I devoted such time to it as I could spare, in making drawings, sketches, and explanations to some of the shop hands and others; but to the best of my recollection, the first machine that was completed, or nearly completed, was the beginning of 1861.

Int. 39. Have you any old letters showing anything you did in the early part of 1861, in reference to this invention? And, if so, produce them; give their dates, state by and to whom written, and read therefrom so much as appertains to this self-rake invention.

(Objected to.)

Ans. I have a letter dated February 22, 1861, in my own handwriting, addressed to Samuel Leonard, signed by me, and which reads as follows:

160 "DOVER, *February* 22, 1861.

"Mr. S. LEONARD:

"SIR: I received the hundred dollars you sent by express, and was at the York depot at your mentioned time to meet you there on your way to Washington. I was in Washington this week to make arrangements for my rake on my machine. I think I have the best and simplest rake in use which I will have perfect till the first of April. I can sell a machine for almost the same price, with a rake, as I sold them last year. I will send Mr. Yessler up to your place in March some time. About me coming up, would, I think, be better till the latter end of April. Then we could send you a machine with a self-raker on, and to put it up for you, so that we have not to spend any time in harvest.

"Yours, &c.,

"REUBEN HOFFHEINS."

I have a letter from Mr. Leonard, dated February 28, 1861:

"OAKLAND MILLS.

"Mr. R. HOFFHEINS:

"DEAR SIR: I received your letter this day, and am sorry that we did not meet each other. I was detained at Harrisburg, and did not get through little York till next morning. I have just arrived home last night and am sorry that I missed seeing you at Washington City. You was in the Patent Office the same day that I was. I was in two different days; it was the first day that I was that you was. I saw your name in the register, and you was in the Scientific American office on the same day, and the day prior that I was, and still missed each other. I would of been pleased to have seen you. I was looking at machinery a considerable. I would of called with you coming back, but my woman was with me, and she wanted to come by way of Philadelphia City. I want you to tell me whose patent the rake is, and I want you to make it as soon as possible. Would of been glad to of had it on hand by the middle of March, if it could of been had, and put the price just as low as ever you can, because I have the
161 Woods' improved and others to contend with, and they are doing all they can in making theirs better and the price lower, to run me out. Is your raker run by a crank, or drawn by a wheel? Do all you can. I am anxious to try to beat them, if possible. I will do my best—I done so last year for you. Write soon, if please, and tell me whose rake; and if you tell me what day Yessler comes, I will come out to Mifflin and fetch his things."

Another letter, April 9th, 1861.

"OAKLAND MILLS, JUNIATA CO., PA.

"Mr. REUBEN HOFFHEINS,

"DEAR SIR: I will send you one hundred and fifty dollars, by Adams Express, to little York, Pennsylvania, on the 10th inst., which you will send me a few lines, when you get it; don't neglect, and also state to

me what day you will be up at the court, in Mifflin, with your machine. I am juryman that week, and when you come up, I want you to stay one week or ten days, for sure. I want to take you to the east end of the county, among some Dutch farmers. Be sure to be up by Wednesday of the court week with your machine, with raker attached, in good order."

Adjourned to meet at same place, Wednesday, May 15th, 1878, at 9 o'clock, a. m.

R. H. WHITTLESEY,
Notary Public.

May 15th, 1878, met pursuant to adjournment. Same parties present as before. Examination of witness proceeded with. Answer to last interrogatory continued.

My next letter is a letter in my own handwriting.

"DOVER, *April 15th*, 1861.

"Mr. S. LEONARD,

"SIR: I received the money you sent to York by express, which
162 was one hundred and fifty dollars, and send you a reaper to Mifflin, but no rake on, as I have but two finished with rakes on, and the one was sent to Cumberland, and other is not quite finished, which I intend to take to York court next week. As regards coming up to attend your court, I see little necessity for me to come up and tend court, and stay ten days, is impossible for me. I will come up on the 24th or 25th, and stay that week out, or will come the week after and travel a few days with you; but to leave a whole week is impossible, as I have a good deal of travelling round to do, and cannot stay away from home all the time. I would have finished a machine, with the rake on for you, if the time was a little longer from the time you sent your letter. I will finish more rakes, and will send you some, if you want any. The rake is working on the platform the same as the 'Dorsey' rake, but in emptying out it passes away from the grain and revolves in its axis, and passes over the driver's head, if he sets on his seat. Please send a letter to York, I will get it sooner, whether I shall come the court week or the week after.

"Yours, &c.,

"R. HOFFHEINS."

I have a letter dated May 17th, 1861.

"OAKLAND MILLS,

"Mr. REUBEN HOFFHEINS,

"DEAR SIR: I wrote to you and have got no answer, and I stated to you that Abraham Seiber, near McAllisterstown, had bought a "Buckeye," but he says he has not for sure, and says if he could get a good self-raker he would buy it in preference, and wants me to get one up immediately, so as he can see it. Now, if they will work right, send me one soon; say right away, and you come up along, as I want you to come up for sure. Don't say no, nor yet disappoint me, and when you come, fetch Myers and Musser's wheels, for sure, as they can't cut till they get them; also, the colored man's platform and other matters, for fear of some breaking. Now, Mr. Hoffheins, I want you to come for certain, and that soon, and write immediately when you get this
163 when you positively will come, and whether you will send a self-

raker, and how it will do. Whether good or not, give us your idea. Write, write, write soon.

"Yours truly,

"SAMUEL LEONARD,
"*Oakland Mills, Juniata Co., Pa.*"

I have another letter dated May 20th, 1861:

"OAKLAND MILLS, JUNIATA CO., PA.

"Mr. R. HOFFHEINS,

"DEAR SIR: I received your letter to-day, and as for the rakers used here we had none, except there was one sold in Mifflin last summer of 'Manny's' with 'Wood's' improvement and raker off with 'Wood's' make, which did not work very well. Now, as regards your rake, this Seiber that wants to see one, and would like to have one if it works right, his land is not much hilly, very little. I don't know for sure, but think the 'Dorsey' rake would do here, but I might be mistaken. You want to know how many I can sell; it's hard to tell; I have sold none yet; the war has caused so much excitement that people was afraid to buy, but think if I had you up a few days with me we could sell some, and if you could get one up soon with rake on, I think we could sell to Seiber, that is, if it works right; all you can do is to try. Our grain looks well, and coming on fast. You must come up soon, but let me know by letter what day; also tell me the prices of the machine you sent last fall, and the one you sent in April, the last; also, the price of them that has the rake on; put them all as low as you can. Terms of payment, I suppose, as before. And don't forget to fetch Myers & Musser's wheels and colored man's box, and his shoe that was broke, that's for mowing; and have you any advertisements or circulars to put up; if so, send me immediately; I should of had some. Also, send me up such things as are likely to break; Yessler will tell you. Please write soon; also, come up as soon as possible, and bring the machine with the rake on it.

"Yours,

"SAMUEL LEONARD."

164 I have a letter in my own handwriting.

"DOVER, *May* 28, 1861.

"Mr. LEONARD,

"SIR: In reply of yours of the 20th inst., I will say the machines I send you, sell the machines I sent last fall at $135; the one I sent this spring at $145, as we sell them five dollars higher with spring raker seat. I think the better plan would be if you would make all the sales you could, or the engagements till next week. We are going to cut green rye with our rake, and then I am able to tell you what they do, and I am only making twelve rakes, so I could not let you have more than one or two rakes. If I would want to make them, I could sell 50 rakes right at home, but will not send any away till I have tried them. As soon as they are tried I will send the machine and my travelling agent, or come myself up. Try and find out how many machines you can sell. If you cannot sell more than three or four machines, I would better send them and not come till grain-cutting commences; then I might start the machine in grain. I want to scatter my raking machines, in order to get them introduced.

"Yours, &c.,

"R. HOFFHEINS.

"Price of rake, $160.
"Price of hand rake, $140, with one guard more than last year.
"Price of the same machine in width as last year, $135."

I have another letter, in my own handwriting, dated:

"DOVER, *June* 8, 1861.

"Mr. LEONARD,

"DEAR SIR:—I had my rake in green rye this morning, and it works all right, so you can expect to get one up there the beginning of next week, but I cannot spare you more than one at present time; they are so much in want that we cannot finish them fast enough; if you should want more hand-rakes you can have some, and still later in the season you might get self-rakes, too, but I would sooner not send more than one up. I ought to scatter them in each county to get them recommended for next season. Them things for them old machines will come along at the same time; all those that saw the rake work are well satisfied with it. Please write me this week yet, whether I shall come up along for mowing grass or wait till he wants to cut grain. I can put up the machine to cut grass to show him how it works with the rake, or send the machine up and you set it up in grass, and let me know till he wants to cut grain and I will come then. It takes so much time and expenses for me to go the road two times, which I think is not necessary for one machine.

"Yours, &c.,

"R. HOFFHEINS."

I have another letter from Mr. Leonard dated—

"JUNE 14TH, 1861.

"Mr. R. HOFFHEINS:

"DEAR SIR: I have received your letter as regards the self-raker, and there was a Mr. Seiber at my house this morning, and wants to buy a reaper; he has a notion to buy a 'Buckeye,' and I wanted to sell him one of these here; he said not; I told him to wait till next week and I would sell him the self-raker, and if that would not please him, when come up, then I would have a 'Buckeye' for him. I can have the 'Buckeye' at day I want one for him; he then agreed to wait till Friday morning, the 21st inst., to go to Mifflin with the wagon, and he is either to take your raker or the 'Buckeye.' I told him I would try to have yours up by Friday morning, the 21st inst., to show him how it works, and I think if you come up that we can succeed in selling it, and sell some others. Be sure to come, and if you can come sooner do so, but don't fail to be here; come along right off. Oh, yes, one of the Canton machines is at Mifflin, but not sold; an agent from Mifflin County brought it here, and I think we can beat it, except the driver's seat, it's well fixed.

"Yours, most respectfully,

"SAMUEL LEONARD,
"*Oakland Mills, Juniata Co., Pa.*"

In reference to the last part of this last letter, I will say that they commenced putting elliptic springs under their seats that season instead of the old S spring.

(The letters produced by witness as above are offered in evidence, and are marked "Complainants' Letter Exhibit, Nos. 6, 7, 8, 9, 10, 11, 12, 13, and 14," respectively. R. H. W., notary public.

Objection is made to their being received, as in their present condition they cannot be so considered.)

Int. 40. Was Leonard still in your employ during 1861?

(Objected to.)

Ans. He was selling machines for me on commission, as before.

Int. 41. Were these letters, numbers 6 to 14, a part of your regular business correspondence with him in that year?

(Objected to.)

Ans. Yes, sir.

Int. 42. So far as you know, or can ascertain, were these letters written at the times they bear date?

(Objected to.)

Ans. Yes, sir.

Int. 43. How long have they been in your possession?

Ans. Those which Leonard wrote to me have been in my possession ever since they were received; which, I believe, was in regular course by mail. Those which I wrote to him, Nos. 6, 9, 12, and 13, were returned to me some eight or ten years ago. I requested him to send all of my letters I wrote to him, appertaining anything to my self-rake, and these are the ones he sent, stating they were all he had on that subject, as he didn't preserve his letters usually.

Int. 44. Are the letters marked Nos. 7, 8, 10, 11, and 14 in Mr. Leonard's handwriting?

(Objected to.)

167 Ans. Yes, sir.

Int. 45. Did you have any correspondence along in 1860 and 1861 with the Scientific American Patent Agency, with reference to patenting your improvements in self-rakers?

(Objected to.)

Ans. Yes, sir.

Int. 46. If any of that correspondence is preserved and in your possesion, please produce it and let it be copied on the record as a part of your answer.

(Objected to.)

Ans. Here it is, and reads as follows:

OFFICE OF THE SCIENTIFIC AMERICAN,
37 Park Row, New York, 12 October, 1860.

REUBEN HOPKINS:

SIR: In reply to your letter of the instant, we would state that your improvement in harvesters is new to us, and, we think, patentable. If you desire us to proceed in the matter, please forward us a small, neat model of the device, with government fee of $30, and we will take the case in hands at once, as per pamphlet enclosed.

Resp'y, &c.,

MUNN & CO.

OFFICE OF THE SCIENTIFIC AMERICAN,
37 Park Row, New York, 14 February, 1861.

R. HOPKINS, Esq.:

SIR: In reply to your letter of the 28th ultimo, we would state that you cannot include all the points you mention in one patent. The sickle and raking device are different inventions, and must be applied for separately. See enclosed pamphlet for further information.

Resp'y, your ob't serv'ts,

MUNN & CO.

168 *Preliminary examination.—Report.*

REUBEN HOFFHEINS, Esq.,
Improvement in Harvester Rake:

We have made a careful examination in the U. S. Patent Office in relation to your invention without being able to find any nearer approach thereto than the Dorsey rake. There have been a number of patents granted in which the tines of the teeth are reversed in passing back over the platform, but neither of these cases bears any resemblance to your invention. It is our opinion that your invention is a good one, and that you can obtain a patent therefor. In making an application the usual risks will have to be incurred, viz, the existence of a caveat, pending rejected applications in the secret archives, or the discovery of a similar foreign invention.

MUNN & CO.,
Solicitors of Patents.

WASHINGTON, *Feb'y 23d*, 1861.

OFFICE OF THE SCIENTIFIC AMERICAN,
37 *Park Row*, *New York*, 27 *March*, 1861.

R. HOPKINS, Esq.:

SIR: In reply to your letter of the 22d inst., we would state that if you wish to experiment with your machine, you had better file a caveat. The government fee is now only $10 for a caveat. If you decide on this course, please send us a sketch and description with government fee of $10, and we will proceed with the case at once, as per enclosed pamphlet.

Resp'y, &c.,

MUNN & CO.

OFFICE OF THE SCIENTIFIC AMERICAN,
37 *Park Row*, *New York*, 22 *August*, 1861.

REUBEN HOFFHEINS, Esq.:

SIR: In reply to your letter of the 15th inst., we would state that your raking device (model of which is at hand) possesses novel
169 features to us, and we think the device is patentable. We will file a caveat for you at once on receipt of $10, caveat fee, as per enclosed pamphlet.

Resp'y, &c.,

MUNN & CO.

OFFICE OF THE SCIENTIFIC AMERICAN,
37 *Park Row*, *New York*, 30 *August*, 1861.

REUBEN HOFFHEINS, Esq.:

SIR: In writing you a few days ago, we omitted to inform you that our fees for preparing the papers for the caveat would be in addition to the government fee, which is $10. Thinking from the manner in which you express yourself in your letter accompanying the order, that you did not understand the matter fully, we herewith return your check and make the explanation. Our fees will be $15 in addition to the government fee of $10. Total $25 for the caveat. If you wish us to proceed with the caveat on these terms, please remit us by draft on New York, payable to our order, or bank bills.

Resp'y, your ob't serv'ts,

MUNN & CO.

OFFICE OF THE SCIENTIFIC AMERICAN,
37 *Park Row, New York*, 24 *Sept.*, 1861.

Mr. R. HOFFHEINS:

SIR: In reply to your letter of the 17th instant, we would state that we cannot prepare the papers for the application for a patent on your harvester until you furnish us with the very model which you propose to have filed in the Patent Office. We must have the identical model to make our drawings from which is to be deposited in the Patent Office, and the one in our possession will not answer to send.

Resp'y, your ob't serv'ts,

MUNN & CO.

170 The letters above referred to are offered in evidence, and marked "Exhibits Munn & Co., Nos. 15, 16, 17, 18, 19, 20 and 21," respectively.

(Objection is made to the letters being received in evidence.)

Int. 47. I notice that one of these letters is addressed "Reuben Hopkins," and two are addressed "R. Hopkins." Were those letters received by you as a part of your correspondence on that subject, and did you understand that they were answers to letters written by you?

(Objected to.)

Ans. Yes, sir.

Int. 48. Have you the letters which you wrote to Munn & Co., or copies of the same, and if not, have you made any effort to procure the originals?

(Objected to.)

Ans. I haven't the original letters, or any copies of them; I never kept any copies. I wrote to Munn & Co. to get the originals, and here is the answer I received. It reads as follows:

OFFICE OF THE SCIENTIFIC AMERICAN,
No. 37 *Park Row, New York*, 19 *March*, 1867.

Mr. R. HOFFHEINS:

DEAR SIR; Your letter of the 15th inst. is at hand. We are unable to send you the letters you speak of, as our correspondence is not preserved later than two years.

Respectfully yours,

MUNN & CO.

Int. 49. I see a reference made to the model in the Munn & Co. letters Nos. 19 and 21, dated respectively August 22, 1861, and September 24, 1861, the latter letter stating, in substance, "that this model will not answer to send to the Patent Office," State what that model was like, when it was made, and why, if you know, was it not suitable for the Patent Office?

(Objected to.)

171 Ans. That model was made, or commenced, the latter part of 1860 or the beginning of 1861. It was similar in construction to Exhibit No. 61, now before me. I think it was a larger model, and not well finished. The model was carried during the spring of 1861, to sell machines by; it was standing around the shop for some time, and then sent to Munn & Co. I think that was the model Mr. Fink, my travelling agent, carried in the spring of 1861.

Int. 50. What has become of that model; and, if you made any effort to find it, state what you did and the result?

(Same objection as Int. 46.)

Ans. I wrote to Munn & Co. for it the time I had my interference with Mr. Reese in 1864, and here is my answer from Munn & Co. It reads as follows:

"OFFICE OF THE SCIENTIFIC AMERICAN,
"37 *Park Row, New York*, 18 *May*, 1864.

"Mr. REUBEN HOFFHEINS:

"SIR: Your letter of the 12th instant is at hand. We did not suppose you would again call for that model, else you would not leave it idle in our hands for years, so we were obliged to cast it away with many others, to make room for new ones on our shelves.

"Resp'y, your ob't serv'ts,

"MUNN & CO."

The last two letters above produced are offered in evidence, and marked Exhibits Munn & Co., Nos. 22 and 23.

(Same objection as to Int. and Ans. 46.)

Int. 51. You have already testified to an experimental trial of one of your complete machines in green rye, in the beginning of June, 1861. Did you make any other experimental trials with any of your completed machines before disposing of them; and, if so, describe such trials, and state when and where they took place?

172 Ans. We made a second trial in the same place the first machine was tried, drove around the patch several times; the rye was very heavy and not ripe yet, and we broke the rake—that is, the casting on top of the rake-post. I took the machine home, made the pattern stronger, had a new casting made and put it on the same machine, and tried it on the same farm, but not in the same field. That machine worked well for some time; I am not able to tell how long, probably several hours, and the centre upright rake-shaft got loose, or the key worked out, and I took the rake-post home. This was the second machine, not the one first tried in the green rye, which I have already referred to. The second trial, the first one referred to in this answer, was made while the grain was getting toward ripening, though it was hardly fit to cut, and in the same year as the first trial, 1861. The third trial was made after the grain was ripe; I don't remember whether it was wheat or rye; it was in the same year.

Int. 52. You have stated, in answer to interrogatory 37, that you furnished six or eight of these self-raking machines for the harvest of 1861. State what was done with those six or eight machines, and when, and if you have any day-book entries showing the disposition of them, please produce the same, and make the book entries a part of your answer.

(Objected to.)

Ans. The first machine that was tried in green rye was taken to York, to the Molter House, was there set up in the yard for a sample machine. I have with me my book of original entry, and I find on page 180, June 18, 1861, that John Detter got one, for which he was charged $155, and credited with the price of a horse, $90. The month and year, June, 1861, are entered at the top of the page, and the book entry, with the day of the month indicated with the figures "18," reads as follows:

"Paid. 18. JOHN DETTER.

Dr. to 1 reaper $155 00
Cr. by horse 90 00

$65 00"

173 The next one is entered on page 182, and a continuation of same year's accounts. The top entry reads as follows, "June 19th," and the charge reads:

"175. 19. WILLIAM NEIMAN.

Dr. to 1 reaper and mower ..... $165 00"

This machine was charged $10 extra because he had two cutting-bars with it.

The next charge, on same page (182), reads:

"175. 19. STAKELY.

Dr. to 1 reaper and mower ..... $155 00"

The next charge, on same page (182), reads:

"3. 20. ISRAEL HEILMAN.

Dr. to 1 reaper and mower ..... $155 00"

The next charge, on same page (182), reads:

"156. 2. SAMUEL LEONARD.

Dr. to 1 self-raking reaper ..... $155 00"

The next charge, on same page (182), reads:

"176. 21. JACOB GLATFELTER.

Dr. to one reaper and mower ..... $155 00"

The next charge, on page 183, under the top heading of June, 1861, reads:

"166. 24. FREDERICK REBMAN.

Dr. to 1 reaper and mower ..... $155 00"

Int. 53. Was this your book of original entry at that time?
(Objected to.)
Ans. Yes, sir.

174 Int. 54. Are the entries which have been quoted in your own handwriting?

Ans. Yes, sir.

Int. 55. Were they made by you at the time in the regular course of your business?

Ans. Yes, sir.

Int. 56. To the best of your knowledge and belief, were they correctly made?

Ans. Yes, sir.

The day book referred to and produced, identified as "Exhibit Hoffheins' Day Book, R. H. Whittlesey, Notary Public," is offered in evidence, so far as appertains to the transactions referred to in the quoted entries and their dates, the same to be produced at the hearing. R. H. W., *N. P.*

Int. 57. I understand, then, that these entries are for the self-raking machines like "Exhibit No. 61," which were disposed of by you in 1861. Is that right?

(Objected to as leading.)

Ans. Yes, sir.

Int. 58. I notice that only one of them, —, that one to Samuel Leonard—is charged as a self-raking reaper; how are you able to say positively that all the other entries which have been quoted refer to sales, or to conditional sales of like machines; and how are you able to select out these entries, as appertaining to the self-raking machine, from other book entries which are charges of sales of reapers?

(Objected to.)

Ans. Because the self-rakers were sold at $155.00 and the hand-rakers at $140.00, except in one or two cases where they got some extras, and the charge was $145.00; and some few of the hand-machines that were built in 1860 were sold for $135.00; they had a cutting-bar four inches shorter. I remember these prices very well.

Int. 59. Do you remember whether those 1861 machines were so constructed that the driver, while cutting grain, could ride on
175 the seat, which was located on the front right-hand corner of the main frame, as you have testified?

(Objected to as leading.)

Ans. He could ride on it?

Int. 60. How do you know that fact?

(Same objection.)

Ans. Because I have seen it done.

Int. 61. State when and where, and give the circumstances under which it was done.

Ans. I saw Robert Naylor drive Mr. Heilman's machine in the harvest of 1861, the day I cannot name, and he was setting in the seat and drove with check lines. I have also seen other parties setting on the seat while the rakes revolved over their heads, and I was setting on the seat myself while the rake was revolved over my head when the machine or machines was standing at the shop. And all the 1861 machines were so constructed and intended for the driver to ride on while the rake was in operation. I believe that I rode on one of the machines myself while it was tried in William Lenhart's field; in which trial I could not tell.

Int. 62. Were those 1861 machines sold absolutely or conditionally; and if the latter, what were the conditions?

(Objected to.)

Ans. They were sold conditionally; if the rake operated well they were to be paid for as self-rakers; in case it didn't operate well, they were to be paid for as hand-rakers.

Int. 63. How were the machines paid for, and what became of them?

(Objected to.)

Ans. Some of them were paid for as hand-rakers, and one of them, I

recollect, was only paid for as a mower; that was the Stakeley machine; those that were paid for as hand-rakers the post was taken off and we put reels on some of them and turned them into self-rakers afterwards, for the season of 1862. My recollection is that all were paid for as hand-rakers, except the Stakeley machine.

176 Int. 64. Why were the rake-posts taken off these machines? (Objected to.)

Ans. Because they broke.

Int. 65. When was it you converted these 1861 machines again into self-rakers, and what changes, if any, did you make?

Ans. During the latter part of 1861 and the forepart of 1862 some of them were turned into self-rakers again by lowering the posts and making new patterns, making them stronger; the sliding tumbling shaft was run crossways to a stand that was fixed on the rear cross-piece in which a small shaft was fastened, with a sprocket-wheel on the outside, and a corresponding sprocket-wheel was on the main shaft, and a square link chain run on those two sprocket-wheels to give motion to the rake. It was found necessary to throw the cutting apparatus or drag-bar from three to four inches further away from the machine to let the rakes pass over the near driving-wheel, and that brought the hook to which the carrying chain is hooked to carry the cutting apparatus nearly in line to the inner edge of the near driving-wheel; by the inner edge, I mean to say the edge nearest the centre of the machine.

Int. 66. Were the machines returned to you at the shop in order to have these changes made? (Objected to.)

Ans. Yes, sir.

Int. 67. About how much were the posts lowered?

Ans. From twelve to eighteen inches; I couldn't exactly tell.

Int. 68. Look at the rake-post, rakes, and connections now shown you and marked "Complainants' Exhibit, No. 22," and state how it compares with the 1861 machine remodeled, as you put them out in 1862, assuming the corresponding devices on "Exhibit No. 61" to be removed, and the devices of "Exhibit No. 62" to be substituted therefor?

Ans. If the 1861 rake-post and driving mechanism was removed and this rake-post, marked "Complainants' Exhibit, No. 62," put on the machine, it would make the machine and rake the same as built and sold in 1862, or the same as the 1861 machine remodeled for the season of 1862.

177 Int. 69. I notice on the model, "Exhibit No. 61," that the hook on the rear of the main frame to which the platform arm is suspended by a chain is considerably to the right of the left-hand drive-wheel, and that a screw hole is made apparently for the attachment of another hook about in line with the inner or right-hand edge of the same drive-wheel. State what these two positions of the hook referred to are intended to represent.

Ans. The hook nearest the centre of the draft-frame represents the position of the hook as it was used on the machine in 1861. The other place represents the place where the hook was used in 1862; as the cutting apparatus was moved farther away from the main frame or truck of the machine, it was necessary to move the hook farther over to correspond.

Int. 70. Did you afterwards lengthen the arm and remove the hook back to its original position; and, if so, when did you do that? (Objected to.)

Ans. After the harvest of 1862 the arm was lengthened again long

Ans. Yes, sir.

Int. 56. To the best of your knowledge and belief, were they correctly made?

Ans. Yes, sir.

The day book referred to and produced, identified as "Exhibit Hoffheins' Day Book, R. H. Whittlesey, Notary Public," is offered in evidence, so far as appertains to the transactions referred to in the quoted entries and their dates, the same to be produced at the hearing. R. H. W., *N. P.*

Int. 57. I understand, then, that these entries are for the self-raking machines like "Exhibit No. 61," which were disposed of by you in 1861. Is that right?

(Objected to as leading.)

Ans. Yes, sir.

Int. 58. I notice that only one of them, —, that one to Samuel Leonard—is charged as a self-raking reaper; how are you able to say positively that all the other entries which have been quoted refer to sales, or to conditional sales of like machines; and how are you able to select out these entries, as appertaining to the self-raking machine, from other book entries which are charges of sales of reapers?

(Objected to.)

Ans. Because the self-rakers were sold at $155.00 and the hand-rakers at $140.00, except in one or two cases where they got some extras, and the charge was $145.00; and some few of the hand-machines that were built in 1860 were sold for $135.00; they had a cutting-bar four inches shorter. I remember these prices very well.

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(Same objection.)

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Ans. Some of them were paid for as hand-rakers, and one of them, I

recollect, was only paid for as a mower; that was the Stakeley machine; those that were paid for as hand-rakers the post was taken off and we put reels on some of them and turned them into self-rakers afterwards, for the season of 1862. My recollection is that all were paid for as hand-rakers, except the Stakeley machine.

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Int. 66. Were the machines returned to you at the shop in order to have these changes made?

(Objected to.)

Ans. Yes, sir.

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Ans. If the 1861 rake-post and driving mechanism was removed and this rake-post, marked "Complainants' Exhibit, No. 62," put on the machine, it would make the machine and rake the same as built and sold in 1862, or the same as the 1861 machine remodeled for the season of 1862.

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Ans. The hook nearest the centre of the draft-frame represents the position of the hook as it was used on the machine in 1861. The other place represents the place where the hook was used in 1862; as the cutting apparatus was moved farther away from the main frame or truck of the machine, it was necessary to move the hook farther over to correspond.

Int. 70. Did you afterwards lengthen the arm and remove the hook back to its original position; and, if so, when did you do that?

(Objected to.)

Ans. After the harvest of 1862 the arm was lengthened again long

enough to put the hook over to its former position again. This was before the time the agricultural fairs commenced in the fall of 1862.

Int. 71. What other changes, if any, did you make in the machine at that time?

Ans. I put the driving mechanism on the grain side of the machine—that is, the rake-driving mechanism—by a pair of bevel wheels, one of which was fastened to the main shaft, and the other one was fastened to a tumbling shaft which had a slide to lengthen and shorten, and was running up to the rake gearing on top of the rake-post. All machines built after that were built in that way.

Int. 72. How many machines of the 1862 pattern or construction were put out or went into use that year?

Ans. There were seven or eight of those machines constructed in 1862, including some of the 1861 machines remodeled. I think about half of them were old machines remodeled, and half of them were new machines built and sold to other parties.

178 Int. 73. Were these machines sold and paid for, and how did they work during that harvest and afterwards, if you know?

(Objected to.)

Ans. These machines were all sold on condition if they worked well they were to be paid for, and they were all paid for and gave satisfaction.

Int. 74. Did you, yourself, see any or all of these machines work during that harvest in cutting grain; and, if so, how did they work?

Ans. I did not see all of them at work, but I saw three or four of them, and they worked well; and all the parties that had them were well satisfied. They cut well, gathered the grain nicely, and delivered good gavels.

Int. 75. Did you make any provision in that 1862 machine for the driver to ride on the machine while it was at work cutting grain?

(Objected to.)

Ans. No, sir.

Int. 76. Why not?

(Objected to.)

Ans. Because the machines were all sold at home, and farmers usually used three or four horses in them, and were not in the habit of riding on machines.

Int. 77. At that time, in your region of country, was it usual for farmers to have check-reins on their farm harness?

(Objected to.)

Ans. No, sir; probably not one in ten had them.

Int. 78. Did you continue building such self-raking machines after the harvest of 1862, and preparatory to the harvest of 1863; and, if so, what further improvements did you add?

Ans. I did continue to build them. Most of the machines built for the season of 1863 were as remodeled in the fall of 1862; that is, with a low rake-post and the driving mechanism on the near side. Some of the old 1861 machines were thus remodeled that fall and winter, and the inside driving gear was also put on some of the 1862 ma-

179 chines. I preferred that driving gear, as we dispensed with the chain, which gave more or less trouble; it was more simple and shortened the connections. I also started to build a machine with an iron frame, in which I raised the rake-post higher than the 1862 post, and put a driver's seat on for the driver to ride on while cutting grain. I think there was two of those machines built; one of them was tried in my own field, cutting oats, during the harvest of 1863.

Adjourned to meet at same place Thursday, May 16th, 1878, at 10 o'clock a. m.

R. H. WHITTLESEY,
Notary Public.

THURSDAY, *May 16th*, 1878.

Met pursuant to adjournment; same parties present as of yesterday. Examination of witness proceded with.

Int. 79. Look at the model now shown you, marked "Complainants' Exhibit, No. 63," and state how it compares in construction with the iron frame machine referred to in your last answer.

Ans. This is a perfect model of that machine. It may not be a regular scale in size, but has all the different parts that machine had excepting this front wooden cross-piece, marked "Exhibit A," was put on to be used in an interference case to show parts of the 1861 machine.

Int. 80. State what became of the two iron frame machines which were finished in 1863, as stated in your answer to interrogatory 78.

Ans. One of them was sold at public sale when I quit business in Dover, and the other one was exhibited at several agricultural fairs in the fall, also at the Maryland Institute, in Baltimore; from there it was shipped back to York and given to Joseph H. Shireman as a sample machine to manufacture by for the harvest of 1864.

180 Int. 81. Do you understand that to be the machine referred to in the testimony of Joseph H. Shireman (one of defendants' witnesses), and which was produced at the taking of his testimony in Philadelphia, and was then designated as "Exhibit A."

(Objected to as not calling for what the witness knows, but merely for his opinion.)

Ans. Yes, sir.

Int. 82. Were you present when Shireman gave his testimony in reference to said machine, and did you then see and examine that machine?

(Objected to.)

Ans. Yes, sir.

Int. 83. Assuming it to be the machine that you furnished to Shireman as a specimen or sample machine, think whether or not any change had been made in the rake-post between the time you delivered it to Shireman and the time it was produced at Philadelphia in connection with the taking of Shireman's testimony by defendants.

(Objected to.)

Ans. I have examined the machine at Philadelphia, and find the rake-post is lowered or shortened.

Int. 84. You mean, do you, that it was lowered or shortened after you delivered it to Shireman, and before it was produced at Philadelphia?

(Objected to, as the witness has already stated what he means.)

Ans. Yes, sir.

Int. 85. In the iron frame machine which you tried in cutting oats in your own field during the harvest of 1863, as stated in your answer to interrogatory 78, was any provision made for a driver to ride on the machine while it was in use in cutting grain; and if any one did ride on that machine, state who, and where the seat was placed.

(Objected to.)

Ans. There was provision made for the driver to ride on the machine. The seat was placed on the rear end of the tongue. I sat on the seat myself and drove the horses while cutting oats.

181 Int. 86. How did that machine work on that occasion; successfully or otherwise?

Ans. It worked successfully.

Int. 87. About how many machines did you sell for the harvest of 1863; I mean your self-raking machines that we are talking about?

Ans. Sold probably thirty of them.

Int. 88. What kind of satisfaction did those machines give that year?

(Objected to as immaterial and irrelevant.)

Ans. They gave good satisfaction.

Int. 89. Did you make and sell any other machines during that or the the following year, 1864, with a seat on them for the use of the driver when operating the machine in cutting grain, and, if so, about how many, as nearly as you can remember?

(Objected to.)

Ans. I can recollect of three machines being sold in 1864, with driver's seats on while cutting grain.

Int. 90. What machines were they, or to whom were they sold?

Ans. Those three machines were wooden frame machines, similar to those built in 1861; one was sold to Mr. Bell, in Delaware, near Pleasant Hill post-office; one to John H. Bear, and one to Peter Sprengle, of West Manchester Township, York County, Pa. They had the rake-driving mechanism on the near side, the same as Exhibit No. 63.

Int. 91. Have you made and can you produce a model of rake-post and connections, illustrative of the corresponding parts of those three machines, and properly proportioned, to be attached to the main frame of Exhibit No. 61?

(Objected to.)

Ans. I have here a rake-post and rake and the driving mechanism, and a seat-spring which, if put to the 1861 machine, will show the machine as sold in 1864.

The model and connections, as produced by witness, are offered in evidence, and marked "Complainants' Exhibit, No. 64."

182 (Proffer and exhibit objected to.)

Int. 92. On what part of the machine did you mount the U-shaped seat-spring and seat, for use of the driver in cutting grain?

Ans. On the front cross-piece of the main frame between the two driving wheels.

Int. 93. Did the machines which you sold to Bear and Sprengle continue permanently in condition for a driver to ride thereon while cutting grain; and, if not, when were they changed, how, and why?

(Objected to.)

Ans. They did not so continue; those machines were sold to Bear and Sprengle, that they were to deliver as nice a gavel as Mr. Bear could make raking from his Hussey machine by hand; that being a rear delivery, and Mr. Bear being an expert raker, he made a very nice gavel by hand. When those self-raking machines were tried they did not deliver as nice a gavel, as I was informed by one of my hands, who put up the machines for cutting grain; the grain being very heavy and lodged, they cut off the rake-post thinking it would make a better gavel, but they found it did not make any difference. I told Bear if such was the case, that the machine did not make as good work as he could make by hand, he should send it back and not pay for it, which he refused; they kept both machines and paid for them.

Int. 94. Did you see the machine produced at Philadelphia by defendants, and identified by Levi Stambaugh or Sternbaugh as "Ex-

hibit Large Machine B"; and state whether or not that machine was ever intended for use with a driver riding on it in cutting grain?

(Objected to.)

Ans. I saw the machine in Philadelphia; it was never intended for a driver to ride on it when cutting grain.

Int. 95. You have referred occasionally to your day book in connection with your identification of machines. Does your day-book show all sales of all machines, or did you sometimes sell for cash and make no entry of the sale?

(Objected to as leading.)

183 Ans. Machine' paid cash or by note were not charged in the book if such notes were given at the time the machine was taken away, or paid cash at that time.

Int. 96. You have occasionally, in your testimony, used the term "hand-machine;" what do you mean by that term?

Ans. I mean a machine in which the grain is raked off by hand.

Int. 97. If, as you state, you had your invention in mind as early as January, 1860, or earlier, why is it that you did not get it into practical use with complete success earlier than the harvest of 1862; or, in other words, what were the causes of this delay?

(Objected to as assuming.)

Ans. The building of the 1859 machines were an entire failure, and I had no capital when I commenced; that already gave me a back-set, and the machines built in 1860 partly failed in grain. I had to put all new reels on them, and remodel the grain-cutting apparatus, which was another heavy loss to me, so my experimenting had to be done between times, and with as little money as it could be done. I was heavily in debt; it was only a question of success or failure of my invention, whether I should be ever able to pay what I owed then.

Int. 98. Do you remember of an early exhibition of one of your machines at Rochester, N. Y.; and, if so, state when it was, and what machine?

(Objected to as immaterial.)

Ans. I have before stated that the machine was remodeled after the harvest of 1862; the rake driving mechanism was put on the grain side of the machine by two bevel wheels, one being fastened to the main axle outside of the main frame, and the other one to a tumbling shaft running to the rake-gear on top of the rake-post, the same as the one shown in Exhibit No. 63; that machine was exhibited at the New York State fair, at Rochester, in the fall of 1862.

Int. 99. How long after this was it when manufacturers commenced to build self-raking machines of this class, with a rake-post
184 mounted on or near the inner front corner of the quadrant-shaped platform. I mean without license or authority from you?

(Objected to, unless the question is so modified as to make it appear what is meant by "this class.")

Complainant's counsel explains that by the term "this class" he means two-wheeled machines having a main frame, stiff tongue, and a hinged platform, supported at the outer end by a grain wheel, and at the inner end from the main frame with a point of suspension beyond the rake support toward the centre of the draft-frame; and he makes this explanation a part of the question.

(Further objected to, as it nowhere appears that a machine so constructed constitutes or is known as a separate and distinct class by itself.)

Ans. The following year, 1863, this plan was adopted by a great por-

tion of the manufacturers then manufacturing hinged-bar machines; and during the years 1863 and 1864 the greater portion of manufacturers adopted that plan of locating their rakes on hinged-bar machines; while in the fall of 1862 I had not seen one at any of the fairs I visited excepting my own.

Int. 100. How generally has the use of such plan been continued from that time to the present?

(Objected to as immaterial and irrelevant.)

Ans. All manufacturers of hinged-bar machines have continued it until the present time.

Int. 101. Were your self-rake machines referred to in your testimony provided with finger-bars, cutting apparatus, grain wheels, and dividers suitable for the purpose?

(Objected to as immaterial and irrelevant.)

Ans. Yes, sir.

Int. 102. Mr. Fink has testified to having made a trip to Mifflin County for you in June, 1861. Have you any letter written to you by Fink at that time, bearing on that fact? If so, produce it, and enter it as part of your answer.

(Objected to.)

Ans. I have such a letter; it reads:

185 "MIFFLIN, *June 21st*, 1861.

"Mr. R. HOFFHEINS:

"SIR: I will inform you that the reaper is not come yet, and I do not think that I will be at home till Monday. Please and tell my family this. I had to write this in a hurry. 2 o'clock and not here.

"JACOB B. FINK."

Letter offered in evidence and marked "Exhibit Fink Letter, No. 24."

(Objection is made to same being received in evidence.)

Int. 103. I believe you have made no specific mention, in your testimony, of the beaters or paddles which in the several models referred to alternate with the rakes. State how your machines were constructed in this respect as compared with the models.

(Objected to.)

Ans. They compared with the models excepting we furnished three paddles and two rakes. In light grain they were used with three paddles and one rake; in heavy grain, take one paddle off and put a rake in place of it, and make twice as many bundles.

Int. 104. Have you had photographs made of any of the models referred to in your evidence, or of any of them, and, if so, produce one of each.

Ans. I have here a photograph of the model Exhibit No. 61 (marked photograph 61, front), taken on the front grain side; also a rear view of the same model (marked photograph 61, rear); also a side view of the same model (marked photograph 61, side view); also a like view of the same, but with the seat in the centre of the machine, between the two driving wheels (marked photograph 61, side view, with rear seat); also a photograph with rear view of the 1862 raking apparatus on the 1861 frame and platform, but without any seat (marked photograph 62).

(The above mentioned photographs offered in evidence, and marked as above.—R. H. W., notary public.)

(Objection made to the above mentioned photographs being received in evidence.)

186 Cross-examination by John R. Bennett, esq.:

X-int. 105. You say you built harvesters in 1859, which you say you got up yourself. Now how was the finger-bar attached to the main frame in those harvesters?

Ans. By a double-hinged joint.

X-int. 106. Was it what was known as a hinged finger-bar, or rigid? To which of those two classes did it belong?

Ans. It was a hinged finger-bar.

X-int. 107. Had those machines a grain platform attached to them?

Ans. Yes, sir.

X-int. 108. What kind of a platform was it?

Ans. It was a platform to rake off at the side.

X-int. 109. What was the shape of the platform?

Ans. It was nearly square, with the outer rear corner cut off.

X-int. 110. Was it what was known as a hand-raker?

Ans. Yes, sir.

X-int. 111. Had those machines a seat on for the driver?

Ans. I think they had.

X-int. 112. Where was the seat located?

Ans. Somewhere in the centre of the main frame.

X-int. 113. Was it not directly back of the axle?

Ans. I don't think it was; I think it was about in the centre of the main frame.

X-int. 114. Were those machines what were known as combined machines, and, if so, did the seat always occupy the same position, both in reaping and mowing?

Ans. They were combined machines; about the seats I don't know; they usually had four horses in.

X-int. 115. Was there any reason that would make it necessary to change the position of the seat in reaping from what it was in mowing?

Ans. I think not, unless it be a heavy raker on the rear part of the machine.

187 X-int. 116. And those machines, built for the harvest of 1859, I understand you, were a total failure?

Ans. Yes, sir.

X-int. 117. What was there about those machines that was entirely your own idea?

Ans. Well, at that time it was all my own idea, excepting a hinged bar, because I never seen a hinged-bar machine before that, excepting the "Buckeye."

X-int. 118. You have discovered since then that there was nothing new about those machines, have you not?

(Objected to so far as it may relate to any matters of construction to which the recollection of the witness has not been called, so that he may know what the questioner is asking about, and also as immaterial.)

Ans. I have discovered that the hinge was not new; I knew that before. But as for the general construction of the machine, I have seen none before nor since like it.

X-int. 119. Were not combined machines in the market for sale prior to 1859, in which there was a seat for the driver, and a hinged finger-bar in combination with a grain platform, and a place for the raker to sit and rake off the grain as it fell on the platform?

Ans. I suppose there were.

Adjourned to meet Friday, May 17th, 1878, at 10 a. m.

FRIDAY, *May 17th*, 1878.

Met pursuant to adjournment; same parties present as of yesterday.

Cross-examination of witness proceeded with.

X-int. 120. After the harvest of 1859, did you discontinue building those kind of machines?

Ans. Yes, sir.

X-int. 121. Did you build any combined machines for the harvest of 1860, and if so, what kind?

Ans. I built the Ball machine for the season of 1860.

188 X-int. 122. Did you build the Ball machine from patterns furnished you, or from a sample machine?

Ans. I built the Ball machine from patterns furnished me by Mr. Ephraim Ball, of Canton, Ohio; I also had a sample machine from Mr. Ball.

X-int. 123. When was it that you first got the patterns and sample machine?

Ans. I got the sample machine in the fall of 1859, and the patterns some time after.

X-int. 124. What time in the fall was it, and how long after did you get the patterns?

Ans. I can't mention the particular time, perhaps about October, I got the machine, and the patterns several months after; the time I can't mention.

X-int. 125. When did you commence making the Ball machine—I mean what time in the year?

Ans. Parts of it, I think, was commenced the latter part of 1859.

X-int. 126. How many Ball machines did you build for the harvest of 1860?

Ans. I think there was some thirty machines built.

X-int. 127. Those machines were what were known as hand rakes, were they not?

Ans. Yes, sir.

X-int. 128. Was there not a seat for the driver upon those machines?

Ans. Yes, sir.

X-int. 129. Where was the seat located, and did it not occupy the same position both for reaping and mowing?

Ans. I think there were two places to put the seat on, one for reaping and one for mowing.

X-int. 130. Where was it placed for mowing, and where for reaping?

Ans. It was placed in rear of the axle for mowing, and could be placed in front of the axle for reaping.

189 X-int. 131. Was there any reason that made it necessary to change the position of the seat in reaping from that which it occupied in mowing?

Ans. Not necessarily.

X-int. 132. The driver could have sat upon the seat in reaping, the seat occupying the same position when used as a mower, could he not?

Ans. He could unless there was a heavy rake, it might have brought too much weight on the rear part of the machine, and I think the raker's seat obstructed the rear place where the driver's seat was fastened for mowing.

X-int. 133. Then the only reason there was for changing the position of the seat was to balance the machine; is not that so?

Ans. Either to balance the machine or to make room to fasten the raker's seat; that depended upon the weight of the driver and the raker.

X-int. 134. Those Ball machines had hinged finger-beams and a grain platform, had they not?

Ans. Yes, sir.

X-int. 135. What was the shape of the platform?

Ans. The platform was nearly square, with the outer rear corner on the grain side being probably six or eight inches shorter than the front of the platform.

X-int. 136. How was the platform supported?

Ans. It was supported on a grain wheel on the grain side, bolted to the cutting-bar; at the front edge the cutting-bar was suspended by a chain on the grain side of the machine; by a lifting lever and chain, the same being used in mowing to raise and lower the cutting apparatus.

X-int. 137. Did you continue to build Ball machines after the harvest of 1860?

Ans. Yes, sir.

X-int. 138. Did you build them from the same pattern furnished you by Mr. Ball?

Ans. No, we made changes during the harvest of 1860.

190 X-int. 139. What changes did you make?

Ans. The reel-post on the first machines were hung on a hinge on the main driving-shaft, and depended on the outer carrying-arm to keep it in its proper place; that was a failure. I put the inner reel-post on the drag-bar and carried the reel chain from the driving pulley or wheel, which was fastened to the main axle on the grain side of the machine; the reel chain was carried forward through two pulleys hung in a spring and swivel to the front cross-piece of the main frame; from there the reel chain run back to a reel wheel attached to the reel shaft to drive the reel; all hand machines after that were built in that way.

X-int. 140. How many Ball machines did you make for the harvest of 1861?

Ans. Perhaps thirty or forty, I can't tell the exact number.

X-int. 141. Prior to the harvest of 1860 were you acquainted with the rake known as the Dorsey?

Ans. Yes, sir.

X-int. 142. Had you not purchased one of the Dorsey rakes, and did you not have it at your shop prior to the harvest of 1860?

Ans. I think I got a Dorsey rake in the summer of 1860; I can't fix the time though.

X-int. 143. For what purpose did you purchase the Dorsey rake?

Ans. My impression is I traded a Ball machine for it.

X-int. 144. Do you know that you did?

Ans. That's my impression.

X-int. 145. You kept that Dorsey rake at your shop and had it there during 1860-'61-'62, had you not?

Ans. It was either sold in 1861 or 1862, I can't recollect.

X-int. 146. Have you no way by which you can fix the time you disposed of this Dorsey rake?

Ans. I have not. I know it laid there for a considerable time, a year or two.

X-int. 147. Did you attach that Dorsey rake to one of your Ball machines?

Ans. No, sir.

191 X-int. 148. Did you sell the rake separate, or was it in connection with a machine?

Ans. I sold the Dorsey machine and rake together as I got it. It was a one-wheel machine, built by J. & P. Flickinger, of Hanover, Penn'a, called the Dorsey machine.

X-int. 149. Have you any circulars or pamphlets that you issued in connection with the Ball machines that you made for the harvest of 1860–'61?

Ans. I have not here; there may be some at home, but I don't know.

X-int. 150. Will you make search on your return home, and if you find any, will you send them to the examiner to be made a part of the record in this cause?

(Counsel for complainants objects to this entire line of cross-examination, and to the circular or pamphlets asked for, as immaterial and irrelevant; but states that while he knows of no other objection to the production of such documents, if any there be, he objects to this manner of introducing the same in evidence, and requests the witness to answer that he will make search for the same, and if he finds any he will put them in the hands of his counsel for such use and in such manner as he may deem best.)

Ans. I will make search for them, and if I find any will send them to my counsel, as instructed by him.

X-int. 151. Do you not know that you have such circulars and pamphlets as called for by the last question?

Ans. I do not.

X-int. 152. When was it that J. & P. Flickinger, of Hanover, manufactured the Dorsey rake?

Ans. I can't tell when they commenced.

X-int. 153. Was it in 1860?

Ans. It was previous to 1860. I think about 1858 or '59.

X-int. 154. During the harvest of 1860 did you not hear of various makes of machines, with self-raker attached, in the field?

Ans. I did not know of any excepting the Dorsey, the Wood chain rake, and may have known about the Morgan rake.

192 X-int. 155. Did you not meet with considerable opposition in disposing of your machines for the harvest of 1860, by reason of having no automatic rake upon them?

Ans. Yes, sir.

X-int. 156. Did you ever try to get the right to make the Dorsey rake in connection with your machines?

Ans. Yes, sir.

X-int. 157. When was it?

Ans. I think it was some time during the summer of 1860.

X-int. 158. Did you succeed in obtaining permission to manufacture the Dorsey rake?

(Objected to as immaterial.)

Ans. No, sir.

X-int. 159. Have you any way in which you can fix the exact date of making your application for the right to manufacture the Dorsey rake?

Ans. I find I have a letter reading thus:

SANDY SPRINGS, 9*th Month*, 17*th*, '60.

Respected Friend R. HOPKINS:

Thy letter of 20th August, was sent to me by my partner, Owen Dorsey, to reply to, and I do so by saying that York and Adams counties,

Pa., are both sold, and we have no right now to grant shop rights to any person in those counties.

I am, very respect'y,

EDWARD STABLER.

P. S.—I would have replied sooner, but for a severe attack of bilious fever.

(Defendants' counsel offers above letter in evidence, marked "Exhibit Dorsey Letter."—R. H. W., *N. P.*)

X-int. 160. Have you any other papers or documents in connection with your endeavoring at any time to get the right to manufacture the Dorsey rake; if so, will you produce them?

193 Ans. I have none.

X-int. 161. After your application above referred to had been refused, did you take any steps towards getting up a rake to use in connection with your Ball machines?

Ans. Yes, sir; I had taken such steps before that.

X-int. 162. Why, then, did you make application for the Dorsey rake?

Ans. I suppose that was for the right of using a continuously-revolving rake; as the Dorsey rake, in the form it was used by Flickinger, could not have been attached to the Ball machine.

(All after the sentence ending with the words "revolving rake" objected to as a volunteer statement.)

X-int. 163. If you had any idea of getting up a rake prior to that time, why did you not proceed to do so, and not make application for the Dorsey rake?

Ans. I did.

X-int. 164. Why did you want to use the Dorsey rake if you thought you could get up a rake of your own?

Ans. I don't know. My rake at that time probably was not so fully developed, or I may have thought by using this revolving principle might conflict with the Dorsey patents.

X-int. 165. You say, "My rake at that time probably was not so fully developed;" was it developed at all; and, if so, to what extent?

Ans. It was developed so far that I was fully satisfied, to put a rake on the Ball machine it would have to be located on the platform. I found some difficulties in getting over the near wheel, and tried many experiments; one of them, as before related, the "nail-keg" experiment, by having a nail-keg on the platform and trying how I would swing my rake over the wheel and get it properly in the grain.

X-int. 166. Why didn't you put it on the Ball machine at that time if you were so well satisfied?

Ans. I did shortly after, and done all I could do at that time—between times, as I had no time to lose. I was my own foreman,

194 kept my own books, and done the greater part of my outside business, as I had no money to pay other persons to do it. I am satisfied I would have been in the field a year earlier if I hadn't been cramped for money.

(Objected to as not responsive.)

The question repeated.

Complainants' counsel suggests that the last answer contains a full reply to the question.

X-int. 167. Why didn't you put it on the Ball machine at that time, if you were so well satisfied?

Ans. As before stated, my experimenting was done between times, and I couldn't afford to take the hands away from work from which I expected to realize money that coming season.

X-int. 168. If you had any idea of getting up a self-rake prior to your application to use the Dorsey, was it any more than a mere idea existing only in your mind?

Ans. No; I think it was fully developed, or nearly so, because I carried it out afterwards.

X-int. 169. What do you mean when you say "fully developed?"

Ans. I mean I had the idea fully fixed what I was going to do.

X-int. 170: Had you actually done anything?

Ans. Not any more than I have stated before.

X-int. 171. What enables you to say that you had even an idea of getting up a self-rake prior to your application to use the Dorsey?

Ans. The letters in evidence here of correspondence between me and Mr. Leonard fixed the date for me.

X-int. 172. Please refer to any letters that show you had an idea of getting up a self-rake entirely your own?

Ans. I haven't got any of the letters I wrote to him at that time, but by the letters received from him I am fixing the date, and I know I was experimenting at that time, as he was my agent, and was very anxious for me to complete it for the harvest of 1860.

(All the answer commencing with the sentence "I know" objected to as a voluntary statement and not responsive.)

195 X-int. 173. Refer to any letters and the particular parts of the same that show you had any idea of getting up a self-rake entirely your own?

Ans. I cannot refer to any letter in which I gave him a general description of the rake, but am satisfied that I was experimenting at that time.

X-int. 174. On the contrary, do not his letters to you show that you never gave him any description or idea of a self-raker?

(Objected to for the reason that on that point the letters speak for themselves, and the opinion asked for is inadmissible for any purpose.)

Ans. I don't find any description in any of them as to how the rake was constructed.

X-int. 175. Do you find anything in any of these letters that show or indicate that you told him you was getting up or had any idea of getting up a self-rake on a plan entirely your own?

(Objection continued.)

Ans. I do not.

X-int. 176. Was it not after the receipt of the letter received from Mr. Leonard in 1860, excepting the one marked "Complainants' Exhibit No. 5," that you made application to make the Dorsey rake?

Ans. I find four letters from Mr. Leonard before I received the letter from Mr. Stabler in regard to the Dorsey rake.

X-int. 178. Question repeated, and a categorical answer desired.

Ans. As before stated, I find four letters from Mr. Leonard before and one after in 1860. The latter one is "Exhibit No. 5."

X-int. 179. You speak of a certain "nail-keg" experiment; when was it you made that experiment?

Ans. That must have been during the winter of 1860; the beginning of the year.

X-int. 180. What enables you to fix the time?

Ans. I know in the winter of 1861 the rake was so far completed

and put on a machine that it must have been the year before, because my experimenting was done at odd times.

196 X-int. 181. Is that the only reason you can give, in saying you must have done it at that time?

Ans. That and the letters from Munn & Co., showing me that my machine was far enough finished in October, 1860, to take steps to get a patent.

X-int. 182. How do those letters from Munn & Co. in any way connect themselves with the "nail-keg" experiment as to enable you to fix the date by them?

Ans. I know the "nail-keg" experiment was during the winter, and I know in my own mind that the letters from Munn & Co. are in regard to getting a model fixed to get a patent; and the "nail-keg" experiment was a considerable time before I took any steps in getting a patent.

X-int. 183. Is that the only way in which you can fix the time when you made the "nail-keg" experiment?

Ans. At present it is.

X-int. 184. Where was it that you made this "nail-keg" experiment, and who, if any one, was present?

Ans. It was in the front part of the shop, on the second floor; I can't just tell if any one was present. I usually went to some place by myself when I had idle time.

X-int. 185. What was the height of that nail-keg?

Ans. It was an ordinary nail keg.

X-int. 186. State what was the first thing you did after getting the keg.

Ans. I had part of a broom-handle which I laid across the nail-keg; it was probably three or four inches longer than the width of the nail-keg; it was slanted off at both ends, to which I nailed strips to form the rake-arms. I drove nails on the outside rim of the nail-keg; I also drove nails in this broom-handle to correspond with those nails drove in the rim of the nail-keg. I should have said before that the arms that were nailed on this broom-handle were put on in opposite directions, so that when one was passing over the platform the other one was standing upwards to pass the wheel; I believe that was my

197 first experiment. The reel-arms put on that broom-handle were in the same position that the reel-arms are on the models in my present exhibits, the broom-handle forming the cross-shaft on top of the rake-post.

(All the answer after the sentence ending with the word "experiment" objected to.)

X-int. 187. Was this keg resting on the floor?

Ans. I think it was resting on the floor at times, and at times on the platform of a machine.

X-int. 188. How long were the pieces of sticks that represented the rake-arms?

Ans. I can't tell that; they were about long enough to reach down the platform floor.

X-int. 189. When the keg was resting on the floor, did the sticks that represented the rake-arms touch the floor?

Ans. I don't think they quite touched the floor; there was room enough to pass without striking.

X-int. 190. When the keg rested on the platform, did the sticks representing the rake-arms pass over the wheel?

Ans. They didn't pass over the wheel; they stood up side of the wheel.

X-int. 191. And is this all you remember of doing prior to the fall of 1860?

Ans. No, I think I put a post up, and put a round board or something on top in which I lengthened out my rake-arms considerable; the rake-arms then may have been three feet long. I found that I had to raise my post to get over the machine. I, off and on, did more experimenting; to what extent I cannot tell.

X-int. 192. When was it you made the experiment just stated in your last answer?

Ans. It was later than the first experiment; I should think between that and the spring of 1860, as during the reaper season I had not much time to experiment.

X-int. 193. And these two experiments which you have just mentioned were prior to your making application to Dorsey, were they not?

198 Ans. Yes, sir.

X-int. 194. When did you perfect the alleged invention for which you obtained letters patent in 1862?

(Objected to as being in part a question of law, and the proper question to ask the witness being as to when the machine was perfected, or any particular part thereof.)

Question withdrawn.

X-int. 195. When did you complete your first self-rake?

Ans. During the winter, beginning of 1861, about January.

X-int. 196. Are you willing to swear positively that you had completed your first rake prior to February, 1861?

Ans. Yes, sir; in all its parts. The driving mechanism was after that changed; instead of having a chain on the grain side of the machine, the first machine tried in the field had the tumbling shaft, as shown in Exhibit 61. The location of the rake-post on the finger-beam and the motion of the rake on top of the rake-post was completed, as before stated. We had changed or strengthened the patterns after the rake had been tried.

X-int. 197. When did you perfect your first self-rake?

(Objected to for indefiniteness, because it does not indicate whether is meant perfectness in the mind of the witness, perfectness in mechanical construction, or perfectness in operation, and the question may cover any one of the three, or possibly some other and different meaning.)

Ans. As before stated, the first self-rake was perfected the early part of 1861; the driving mechanism was changed to a tumbling shaft afterwards, but I am fully satisfied the rake and its location were completed the beginning of the year—say January.

X-int. 198. What "fully satisfied" you?

Ans. Because I know it was completed during the time that I didn't have so many hands at work, and before we started in on that summer work.

X-int. 199. How do you know that?

Ans. Because it was standing on the second floor in the wood shop, where I had the hands at work, when I had a full supply of hands.

199 X-int. 200. Just state what was standing there.

Ans. The first self-raking reaper heretofore referred to.

X-int. 201. You mean you had a completed machine at that time?

Ans. Yes, sir; all except the change of driving mechanism hereto fore stated.

X-int. 202. My question is, had you a completed machine at that time?

(Objected to, for the reason that the question has been already answered.)

Defendants' counsel denies that the question has been already answered, and refers to the record.

Ans. I had a completed machine, as before stated; the intention was then to run it by chain on the near side, the same that the reel was run on the hand machines in that year, and that chain would have run the rake, and did run it, as it was afterwards tried in the lot; but I found less complication by putting the tumbling shaft on.

X-int. 203. Referring to your letter "Complainants' Exhibit, No. 6," I find the following: "I think I have the best and simplest rake in use, which I will have perfect till the first of April;" if that statement was true, then you did not have your rake perfected in January, 1861?

Ans. I think I had made up my mind to change from the chain to the tumbling shaft, and that was likely made between January and April some time.

(Answer objected to as evasive and not responsive.)

X-int. 204. Question repeated.

Ans. As before stated, the last driving mechanism I don't think was finished at that time; but the chain driving mechanism, as I had at first intended to run it, was completed at that time.

(Same objection.)

X-int. 205. Does the letter to which I have referred make any mention to the driving mechanism?

Ans. No, sir.

200 X-int. 206. Did you not distinctly state in that letter that you would not have your rake perfected until the first of April?

Ans. I did not. I state in that letter "I will have it perfect till the first of April."

X-int. 207. When did you commence work upon your first self-rake?

Ans. What do you mean by that; commence on anything; on the machine, or what?

X-int. 208. When did you commence to build your first combined machine with self-rake?

Ans. I think the first circular platform to put a self-rake on was either built during the harvest of 1860, or right after harvest of 1860.

X-int. 209. I understand you, you first constructed the platform before you constructed any part of the rake; is that so?

Ans. The platform naturally would have to be built first, before you could attach the rake to it; there may have been some patterns made before that time.

X-int. 210. What portion of the rake did you complete first, and when?

Ans. I don't know as I can tell you. I can't remember.

X-int. 211. You have spoken of a machine which you tried in the green rye; when was that machine completed? I refer to the first trial.

Ans. That machine was completed as tried in the green rye with the tumbling shaft, I think about the first of April. I cannot fix the date positively. I know it was standing around there some time before we tried it.

X-int. 212. That was a Ball machine, was it not?

Ans. Yes, sir.

X-int. 213. Had that machine a seat upon it?

Ans. Yes, sir.

X-int. 214. Where was the seat located?

Ans. It was located on the front cross-piece of the main frame. There was a metal piece screwed on to receive the spring of the seat.

201 X-int. 215. Was there not a seat on that machine, on the main frame, directly back of the axle?

Ans. There was a place to put a seat on, nearly or perhaps a little back of the axle; that is, you could change the seat from one place to the other.

X-int. 216. When was it you first tried that machine?

Ans. It must have been in the beginning of June, according to the letter I wrote to Mr. Leonard on the 8th of June, in which I say, "I had my rake in green rye this morning." I know it was before the grain was ripe.

X-int. 217. How did you take the machine out of the field the time you tried it?

Ans. I don't know as I recollect that. One of the machines in one of the trials, I think, was taken out on the wagon. In another trial, I think it was hauled out by the horses hitched in the machine.

X-int. 218. Where did this first trial take place, and who was present?

Ans. It took place in William Lenhart's field. Some of the shop-hands were present, and some of the town-folks came out to witness the trial. I don't know that I can name them from my own recollection.

X-int. 219. How was that machine driven in the field while reaping?

Ans. My impression is that it was driven with two horses.

X-int. 220. Who drove the machine?

Ans. I think it was Alfred Weaver, Lenhart's farmer.

X-int. 221. Where did he sit while driving the machine, during the operation of reaping?

Ans. I think he sat on the near horse.

X-int. 222. Did anybody sit upon the seat of that machine during that trial while reaping?

Ans. My impression is, there was somebody sitting on the seat; but I am not positive.

X-int. 223. Are you willing to swear that any one sat upon that machine while reaping, during that trial?

202 Ans. I am not; as I am not positive.

X-int. 224. Why did you not instruct the driver to ride upon the seat?

Ans. I cannot tell; it was at that time customary to ride upon the horses, and this being only a small patch of grain, it is not likely he would have done it if I had wanted him.

X-int. 225. How long did that trial last?

Ans. I couldn't tell the length of time; I think we run along the side of the patch once; run back empty, and cut the second swath.

X-int. 226. Why did you not continue, and cut another round?

Ans. Because the grain was not ripe yet, and he only gave me permission to cut enough to try it.

X-int. 227. Did anything break about the machine?

Ans. No, sir; not in the first trial.

X-int. 227. What became of that machine after the trial?

Ans. It was taken to York to the Mutter House; sat up there in the yard, as a sample machine, to sell by.

X-int. 229. Did it have the seat on?

Ans. Yes, sir.

X-int. 230. How many machines like that did you build for the harvest of 1861?

Ans. About six or eight were finished.

X-int. 231. Were they all made after the same pattern?

Ans. Yes, sir.

X-int. 232. Did you try any other of those machines?

Ans. Yes, sir.

X-int. 233. How many?

Ans. We tried another one in the same patch of rye, when the rye was nearly ripe; it was not quite ripe; but we had intended to cut the whole patch; the whole patch was several acres; but the machine broke before half of it was cut. We tried still another one, or probably the same machine on the same farm, after I had made the patterns heavier, and made new castings. That machine worked well for
203 a considerable time. I found the centre rake-shaft got loose, and I stopped them cutting. I saw another one tried in Mrs. Hyde's field, near York; that machine cut some several acres, perhaps, and it broke. I saw another one tried in Israel Heilman's field; I saw that machine towards evening; it did good work, but broke the next day, as I was informed; I was not there.

X-int. 234. Who was present at the second trial, and when did it take place?

Ans. I cannot fix the day; it must have been the latter part of June. The greater part of the shop hands and a good many town-folks were out.

X-int. 235. Name any and all parties that you now remember being present at that trial.

Ans. I think William Lenhart, the owner of the field; I think Alfred Weaver, and, I believe, nearly all the shop hands.

X-int. 236. Who drove the machine at the second trial?

Ans. I don't know that I can tell, but I think likely Weaver drove it.

X-int. 237. Can't you swear positively who did drive the machine?

Ans. I cannot; my impression is Weaver drove it.

X-int. 238. How many horses did the team consist?

Ans. That I can't tell; I think there was only two horses.

X-int. 239. During the operation of reaping, where did the man who drove the horses sit?

Ans. I can't tell; it strikes me, in one of the three trials, the driver rode on the machine, but I am not positive.

X-int. 240. Are you willing to swear positively that during either of those three trials the driver sat upon the seat while reaping?

Ans. I am not; but I am positive that I was sitting on the seat in one of the trials myself while the rake was in operation.

X-int. 241. During which trial?

Ans. That I can't tell you.

X-int. 242. For how long a time did you occupy the seat while the machine was reaping?

204 Ans. That I couldn't tell.

X-int. 243. How do you know you sat upon the machine at all while it was reaping?

Ans. I know it from memory that I rode on it.

X-int. 244. And yet you cannot say when it was nor for how long a time?

Ans. No; I know it was in one of those trials; I think one of the first trials.

X-int. 245. Give the names of any of the parties who were present while you sat upon the seat during the operation of reaping.

Ans. Alfred Weaver, I think, and William Lenhart, and some of our shop hands, which I don't recollect.

X-int. 246. Did you occupy an upright position while sitting on the seat?

Ans. Yes; there was plenty of room for a man to sit on it.

X-int. 247. Why, then, did not the driver occupy the seat?

Ans. I am not positive that the driver didn't occupy the seat in the second trial, but it was customary in that part of the country to ride the horse.

(All after the word "but" objected to.)

X-int. 248. Why, then, did you put the seat on the machine?

Ans. To accommodate those that wanted to ride on the machine.

X-int. 249. Are you willing to swear that in any of those three trials the driver occupied the seat during the operation of reaping?

Ans. I am not. As I have before stated, I am not positive.

X-int. 250. You say you sat upon the seat during the operation of reaping; where was that seat located?

Ans. On the front right hand corner of the main frame.

X-int. 251. Did you ever sit upon the machine during the operation of mowing with the seat located directly back of the main axle?

Ans. I think I did.

205 X-int. 252. When?

Ans. At different times in starting machines for mowing.

X-int. 253. Did you ever sit upon the seat when so located during the operation of reaping?

Ans. Not that I recollect.

X-int. 254. Did you ever see any one occupy the seat in that position during the operation of reaping?

Ans. Not that I recollect.

X-int. 255. Had you placed the seat back to the position it was to occupy for mowing, could a man have sat there during the operation of reaping without being struck with the rake or beater arms?

Ans. I believe he could.

X-int. 256. Did you ever try it?

Ans. No, sir.

X-int. 257. Why not?

Ans. Because we usually put the seat in front for reaping.

X-int. 258. Are you willing to swear that a man could have occupied the seat if located back of the main axle during the operation of reaping without being struck?

Ans. I am not. I haven't tried it, but I believe a man could sit there.

X-int. 259. Did you ever see anybody sit upon the seat and drive the team during the operation of reaping on those 1861 machines?

Ans. I did.

X-int. 260. When was it?

Ans. Robert Nayler drove Israel Heilman's machine by sitting on the seat, and drove with check lines.

X-int. 261. Did you ever see anybody else do so?

Ans. Not positive, to my present recollection.

X-int. 262. When was it you saw him?

Ans. In the harvest of 1861; the day I cannot fix.

X-int. 263. Where was it?

Ans. In Israel Heilman's field.

206 X-int. 264. Who was present?

Ans. Mr. Heilman and some other parties, who I don't now recollect.

X-int. 265. Don't you remember the names of any other parties?

Ans. I think Jacob Welcumer was there.

X-int. 266. How long did he occupy the seat while reaping?

Ans. I cannot tell. I was there probably an hour; he occupied it during that time. Perhaps it was only a half hour.

X-int. 267. Are you willing to swear that he occupied the seat for a quarter of an hour?

Ans. Yes, sir; he occupied it for all the cutting that was done during the time of my stay.

X-int. 268. How near did the rakes or beater-paddles come to the top of his head?

Ans. I should think there was about ten inches between his head and the beater paddles; probably more.

X-int. 269. What size man was he?

Ans. He was a man not quite as tall as I am; probably two inches shorter. He is a man about five foot seven inches.

X-int. 270. Did he occupy an upright position while riding on the seat?

Ans. Yes, sir.

X-int. 271. How did you happen there at that time?

Ans. I went there to see it.

X-int. 272. Can't you tell when it was?

Ans. I cannot fix the day; it was in the beginning of the harvest of 1861.

X-int. 273. Was he the only person you ever saw ride on any of those 1861 machines during the operation of reaping; and are you willing to swear that you did see anybody else so ride upon those machines?

Ans. I cannot positive swear who I did see, but am satisfied I saw some parties ride on the seat while cutting grain, besides Nayler.

X-int. 274. Will you swear that you ever saw any one occupy
207 the seat on any of those 1861 machines during the operation of reaping, excepting Nayler?

Ans. To the best of my knowledge, I did.

(Objected to as not responsive.)

X-int. 275. Question repeated.

(Complainants' counsel insists that the answer is responsive, and that the witness having answered to the best of his knowledge, is not bound to give any other answer unless he wishes to do so.)

Ans. To the best of my knowledge, I did.

X-int. 276. Give the names of any other parties whom you are willing to swear occupied the seat on any of those 1861 machines during the operation of reaping?

(Objected to, for the reason that the same question in substance was asked in cross-interrogatory 273, and was fully answered and no objections were taken to the answer; and because such repetition of questions involves a waste of time, money, and of the patience of counsel and of the court, without any benefit to anybody except the commissioner and the printer.)

Ans. I cannot give any names, as I have told you before.

X-int. 277. What was the nature of Mr. Heilman's land upon which the machine was being used when you saw Nayler occupy the seat while reaping?

Ans. It was an ordinary rolling field.

X-int. 278. What was the nature of the land upon which the machine was tried when you say you occupied the seat?

Ans. It was an ordinary rolling field, such as the York County land usually is.

X-int. 279. While you sat upon the machine was it always level, or was the outer end of the platform at any time elevated, say as much as six inches?

Ans. It was not level, and I should think the outer end of the platform was elevated fully six inches.

X-int. 280. Ever as much as a foot?

Ans. I couldn't tell.

X-int. 281. How much clear space was there between the beater and your head when the platform was so raised at the outer end?

208 Ans. I can't tell.

X-int. 282. Didn't you take the trouble to look?

Ans. I don't know that I did; but in the construction of those machines I know allowance was made for the rise and fall of the platform, so as not to interfere with the driver.

(All the answer commencing with the words "but in the construction" objected to as a volunteer statement.)

X-int. 283. What allowance did you make?

Ans. I think there was at least ten or twelve inches.

X-int. 284. Was not the seat in those 1861 machines located on a projection running out at the side of the front platform of the main frame?

Ans. There was a metal foot-piece bolted on the front cross-piece of the main frame, where the spring was bolted on, which brought, I think, the spring outside of the main driving-wheel, so as not to interfere with the driving-wheel, but the piece was not more than about four inches long; that would leave space between the spring and the main driving-wheel from a half inch to an inch, as near as I can recollect.

X-int. 285. What was the height of the rake-post on those machines?

Ans. I can't tell the exact height; it must have been from three and a half to four feet.

X-int. 286. Have you no way by which you can tell the exact height?

Ans. I have not.

X-int. 287. What was the height of the seat?

Ans. I don't know; we had those S springs different heights; say from twelve to sixteen or seventeen inches high.

X-int. 288. Can you give none of the measurements of those machines?

Ans. I cannot.

X-int. 289. Are you willing to swear that the height of the rake-post on those machines was three feet and a half?

Ans. I have told you before, it must have been between three and a half and four feet high.

209 X-int. 290. Can you give me no better idea as to the exact height of the rake-post?

Ans. I have told you before; I have no post to measure; I know there was plenty of room for a driver to ride on.

X-int. 291. Were not those 1861 machines made according to some definite plan of measurement?

Ans. What do you mean by "definite plan?"

X-int. 292. Did you make them from drawings?

Ans. The machine itself was made after patterns sent me by Mr. Ball. The rake was made from sketches, on what scale I cannot tell.

X-int. 293. Did you make this model, "Complainants' Exhibit, No. 61?"

Ans. I had it made.

X-int. 294. What was it made from?

Ans. The running part was made from an old machine; the rake and its driving mechanism was made under my instructions.

X-int. 295. From what old machine were the running parts made?

Ans. From an old Ball machine that was built in 1862.

X-int. 296. Had that old Ball machine a self-rake on?

Ans. Yes, sir; of the 1862 pattern.

X-int. 297. In what proportion is this model from that old Ball machine from which it is made?

Ans. That I cannot tell.

X-int. 298. Did you not instruct them to make it on a certain scale?

Ans. I don't think I did; I think I told them to make it about the size of the other model.

X-int. 299. What other model?

Ans. The 1863 model; model No. 63; and I suppose this model, with the 1862 rake-post on is nearly as the 1862 machine was built. This rake-post I told him to make higher; I didn't think it was material as regards the rake-post, whether it was higher or lower than it is
210 now, as we had no regular heights to go by, as we had no old post to get the heights of it; of the 1861 post.

(All the answer commencing with the words "I suppose," objected to as a volunteer answer on the part of the witness, not called for by the question.)

X-int. 300. Who made this model, No. 61?

Ans. Henry Bush; he resides in York.

X-int. 301. Did you furnish him with any drawings of any kind from which to make the rake?

Ans. I did not.

X-int. 302. In what proportion is this model, as a whole, to those machines built in 1861?

Ans. The machines built in 1861, the driving-wheels were about three feet high.

X-int. 303. This model does not correctly show the location of the seat as it was on those 1861 machines, does it?

Ans. I think the inner edge of the seat spring was a little outside of the outer edge of the driving-wheel, enough not to strike the driving-wheel.

X-int. 304. And I understand you, you gave the instructions for making the rake-post and attachments as shown in model 61?

Ans. I did.

X-int. 305. In what proportion is that rake-post to those on the 1861 machines?

Ans. That I cannot tell, but think it ought to be one inch and a half higher. I was away from home when he made the rake-post, and had intended to have a higher one made, but he was sick and he couldn't make it before we commenced taking testimony in York.

(Objected to as not responsive, being a volunteer statement.)

X-int. 306. Examine the drawings, division No. 1, attached to reissue patent No. 2490, and state whether the rake-post in model No. 61 is not entirely out of proportion to the rake-post as shown in the drawing.

211 (Objected to as immaterial, patent No. 2490 being the later of the patents in controversy.)

Ans. It is higher in proportion.

X-int. 307. The same as to figure 7 and figure 8 of the drawing attached to reissue No. 2224?

Ans. Yes, sir.

X-int. 308. If a machine was to be constructed in accordance to the proportions shown in the drawings in the reissued patents, could the driver sit upon the seat during the operation of reaping, the seat being located as shown in the reissue No. 2490?

Ans. I think he could, supposing the driving-wheel to be three feet high; the drawing is not quite three inches, and the space from the front part of the rake-seat to the rake-head is nearly four inches.

X-int. 309. Please measure the distance from the letter W to the letter V, as shown in the drawing as attached to the reissued patent No. 2490.

Ans. According to that measurement he could not, as he would have but about two feet and three inches space, but I don't think that is by any means a fair measurement.

X-int. 310. You have said that the rake-post in model 61 is too high in proportion as shown in the two patents already referred to; now if a machine was built even in proportion as shown in this model, could the driver sit upon the seat during the operation of reaping when placed as I now have it, back of the axle, without being struck with the arm carrying the beater?

Ans. The answer to interrogatory 309 I made without measuring the drawing; since I measured the drawing of reissue 2490, I find I am wrong, and there is accordingly more space between the rake-head and the seat in proportion to the size of the drawing than there is in the model No. 61.

(Objected to as not resposive.)

X-int. 311. If a machine was built in the same proportion as shown in model 61, with the seat located back of the axle as it now is, could a driver sit upon the seat while reaping without being struck?

212 Ans. No, sir; I think not, as that rake-post is not in proportion as that machine was built in 1861.

Adjourned to meet Saturday, May 18th, 1868, at 9 a. m.

R. H. WHITTLESEY,
Notary Public.

SATURDAY, *May 18th*, 1878.

Met pursuant to adjournment. Same parties present as of yesterday.

Cross-examination of witness continued.

X-int. 312. Why did you not give the patent to the model-maker, and let him make them from the drawings?

Ans. Because I want to show a model as the machine was built in 1861; and that was a Ball running gear and cutting apparatus.

X-int. 313. Why, then, did you not show the rake-post the same as it was in the 1861 machine?

Ans. Because I wasn't there when the rake-post was made. I had intended to have a higher rake-post made, but the model-maker was sick and couldn't make it before the taking of the York testimony commenced.

X-int. 314. How do you know that the rake-post in that model is not in the same proportion that it was in the 1861 machine?

Ans. Because the 1861 machine I know had plenty of space between the seat and the beater for a driver to ride on, and on measuring of

this model, taking it on a scale of the driving-wheels, I find there would not be enough room for the driver to sit.

X-int. 315. Then 'tis a mere matter of guess with you as to the exact height the rake-post in the model should be, to be in exact proportion to the rake-post as it was in the 1861 machine?

Ans. As before stated, it hasn't got proportionate room or space between the beater-paddle and the driver's seat that the 1861 machine had.

X-int. 316. What was the space between the beater and the driver's seat in those 1861 machines?

Ans. I can't tell now positively; I should think about four feet.

213 X-int. 317. Did the rake post extend above the top of the wheel?

Ans. Yes, sir.

X-int. 318. How far?

Ans. I can't tell exactly.

X-int. 319. Was it as much as two feet?

Ans. No, I don't think it extended quite that far, probably a foot and a half or more.

X-int. 320. What enables you to fix any distance, or even say it extended above the top of the wheel?

Ans. I know it extended above the top of the wheel, from memory, in looking at the machine.

X-int. 321. Is that the only reason you can give?

Ans. And I know besides it was high enough to elevate the rake and beaters high enough to pass over the driver's head.

X-int. 322. And you fix the height from that fact?

Ans. Partly so.

X-int. 323. "High enough to pass over the driver's head" when sitting where?

Ans. When sitting on the seat.

X-int. 324. The seat was located where?

Ans. When located on the front corner of the main frame.

X-int. 325. And the rake-post must have been a foot and a half or more above the top of the wheel, in order to have enabled the driver to occupy the seat on the extreme outer corner during the operation of reaping?

Ans. I don't think it would be necessary to be that much higher, but I believe that post was that much higher.

X-int. 326. Is not that the way in which you fix the height which you have given?

Ans. Partly so, and partly from recollection that the post extended considerably above the wheel.

X-int. 327. What was the length of the rake and beater-arms in those 1861 machines?

Ans. That I can't tell at present.

214 X-int. 328. Have you any way in which you can tell other than by mere guess?

Ans. I have not.

X-int. 329. Did you instruct the model-maker at the time he made model 61 where to locate the seat?

Ans. I did instruct him to locate the seat on the front cross-piece on the off side of the main frame.

X-int. 330. At any time during the operation of reaping, if the grain wheel of the platform was elevated one foot and the outer drive-wheel

of the main frame was elevated six inches, how much clear space was there between the seat and the beater?

Ans. I cannot tell at present.

X-int. 331. Did you ever sit upon one of those 1861 machines during the operation of reaping in a field where the ground was uneven so that the machine would assume such position as I mention in my last question?

Ans. I don't know that I did, but calculation was made in the construction of the machine, making allowance for the rising and falling of the finger-beam or platform, so as not to interfere with the driver.

X-int. 332. Was calculation made so as to enable the driver to occupy the seat in reaping when located back of the axle?

Ans. I don't know that special calculation was made, but I believe under ordinary circumstances the driver could sit on that seat when reaping.

(All after the word "but" objected to as volunteer statement.)

X-int. 333. Did you ever attempt to occupy the seat when so located during the operation of reaping?

Ans. Not to my recollection.

X-int. 334. What was that seat intended for when so located?

Ans. The seat was shifted from one place to another to balance the machine.

X-int. 335. Did you ever place the seat there during the operation of reaping?

Ans. Not to my recollection.

215 X-int. 336. When did you locate the seat there, and for what purpose?

Ans. The seat was located there sometimes in mowing, and I have seen it used in front of the axle for mowing.

X-int. 337. Was it not intended to be so located for mowing; that is, back of the axle?

Ans. Yes, sir.

X-int. 338. Had the seat been so located during the operation of reaping in those 1861 machines, how much space would there have been between the seat and the arm supporting the beater?

Ans. I can't tell the exact space, but there wouldn't have been much space above the driver's head.

X-int. 339. How do you know there would have been any space, or that the driver could have sat there at all without being struck?

(Cross-examination heretofore made or hereafter made as to the rear location of the driver's seat objected to as inadmissible in cross-examination or for any other purpose, unless defendants' counsel considers the witness his own on this matter, the objection not having been sooner taken partly in order to save time and space, and partly because it was hoped it would come to an end in a reasonable time.)

Ans. As before stated, I believe a driver could ride there, although to my recollection I have not tried it.

X-int. 340. Did you ever so locate the seat for reaping?

Ans. I don't know that I have or have not.

X-int. 341. Supposing the seat to be so located, and the grain wheel of the platform raised a foot, how much space would there have been between the driver's seat and the arm of the beater?

(Objected to as a useless question, the witness already having stated in substance that he cannot give the measurements on which the answer to the question must necessarily be based.)

Ans. I cannot tell, as I have never tried.

X-int. 342. You have said you "believed" the driver could occupy the seat when so located during the operation of reaping; do
216 you believe he could have done so if the outer end of the platform had been elevated a foot?

Ans. I can't tell.

X-int. 343. Are you willing to swear that a man could have occupied the seat back of the axle in reaping in those 1861 machines without being struck?

Ans. No. I have told you before I believe a man could have rode there, but I have not tried it.

X-int. 344. Do you believe that you could have occupied the seat during the operation of reaping, the outer end of the platform being elevated a foot?

Ans. I don't know; I haven't tried it; elevating the platform that much might have interfered.

X-int. 345. Don't you know it would, and that, too, to a considerable extent?

Ans. I do not, as the variation of the reel-beater in height is not as much in the centre of the machine, where the rear seat is placed, as it is further away from the suspension of the cutting apparatus.

X-int. 346. If you had any "belief," why did you not so locate the seat for reaping?

Ans. Because it was located forward to balance the machine.

X-int. 347. Are you willing to swear that you made any "calculation" so as to enable the driver to occupy the seat when located on the extreme outer corner of the platform, under any and all circumstances?

Ans. I don't know that the calculation was made especially to put the rake seat on the outer corner, but I know provision was made to get the rake-post high enough and to turn the reel-arms away so as to admit a driver to ride on the machine.

X-int. 348. "To ride on the machine," where?

Ans. On the driver's seat.

X-int. 349. "The driver's seat," where located?

Ans. On the main frame.

X-int. 350. What part of the main frame?

217 Ans. I don't know that any special calculation was made at that time; the 1861 rake being very heavy, it was put way forward to balance the machine.

X-int. 351. And you calculated so the driver could occupy the seat so located while reaping, did you not?

Ans. Yes, sir.

X-int. 352. Please give the exact calculation and provisions you made.

Ans. I don't know that I can do that.

X-int. 353. Have you any circulars or pamphlets which you distributed with those 1861 machines.

Ans. I haven't seen any for many years; I don't know whether there is any in existence now or not.

X-int. 354. Did those pamphlets or circulars contain a cut of your 1861 machine?

Ans. I think not.

X-int. 355. Are you willing to swear positively that you have not now in your possession, or do not know of the existence or whereabouts of any pamphlet or circular of your 1861 machine?

Ans. Yes, sir. I have none here, and haven't seen any of them for some

time, and don't know if there is any in existence now or not; if there is, I don't know where they are.

X-int. 356. Have you in your possession any of those old 1861 machines, or any parts of the same?

Ans. I have not.

X-int. 357. Do you know of the whereabouts or existence of any of those old 1861 machines, or any parts of the same?

Ans. I do not. It's quite likely that the Heilman machine is partly in existence, but not as used in 1861. The last I knew he had it as a mower, but he has quit farming and had public sale; the machine may have been sold; he lives in Weiglestown, York County, Pa.

X-int. 358. Do you know of the whereabouts of that machine at present?

Ans. I do not; but likely it is at his place yet.

218 X-int. 359. You say "but not as used in 1861;" wherein does it differ?

Ans. It was changed as machines were changed in 1862, and likely the rake-driving mechanism put on the near side afterwards, as machines were built since the harvest of 1862.

X-int. 360. Have you in your possession, or have you had since the commencement of this suit, any of the rake-posts belonging to those 1861 machines?

Ans. I have not.

X-int. 361. Did you ever obtain a patent for your 1861 machine; if so, when?

(Objected to as in part a question of law; that is, as to whether or not any patent which the witness may have obtained does or does not cover the 1861 machines, and also because parole proof on this point is inadmissible (except expert testimony, which the witness is not called to give nor shown to be competent to give), the only admissible proof on this point being any patent issued to witness, in connection with proofs as to the construction and operation of the 1861 machines.)

Ans. I obtained a patent in 1862 covering some of the features used in the 1861 machines. I obtained another patent in 1863 covering some of the features used in the 1861 machines.

X-int. 362. I understand you that the application for your 1862 patent was based upon your 1861 machine; is that so?

Ans. It was based partly on that machine and my earlier experiments, as I knew nothing about obtaining patents at that time.

(All the answer commencing with the sentence "as I" objected to as a volunteer statement.)

X-int. 363. What enables you to say that you built a number of machines with self-rake in 1861?

Ans. I recollect it very well from memory; besides, my account-book gives me the date of those machines.

X-int. 364. Refer to your account-book, and point out what it is you refer to.

Ans. I refer now to page 180, June 18th, 1861:

219 "JOHN DETTER,

Dr. to 1 reaper	$155 00
Cr. by 1 horse	90 00
Leaving a balance of	$ 65 00',

I also refer to the other entries already referred to, and entered on the record of sales of 1861 machines.

X-int. 365. How does that first entry enable you to say it was one of your self-rakers?

Ans. Because self-rakers were sold at $155.00, and hand-rakers for $140.00.

X-int. 366. Refer to your letter to your agent, Mr. Leonard, dated May 28, 1861, and state if you do not there find the following: "Price of rake, $160.00."

Ans. I find it there stated in that letter, "Price of rakes, $160.00," but find in the book all the self-rakes are charged at $155.00, excepting William Neiman is charged $165.00; I suppose he got two cutting bars.

X-int. 367. I see, under head of June 20, 1861, the following:

"ISRAEL BOYER,

Dr. to 1 reap.. ..... $150 00."

Can you tell me what kind of a machine that refers to?

Ans. Yes, sir; that was the sample hand-machine I got from Ball in 1859; it had two cutting bars; therefore we charged $10 more than other hand-machines.

X-int. 368. Do you find anything in your book to indicate what you have stated?

Ans. I do not, but I recollect very well that machine cut on the right-hand side and everybody else objected to it, and Boyer got that machine.

(All the answer commencing with the word "but" objected to as not called for.)

220 X-int. 369. Referring to your book, page 182, I find the following:

"WILLIAM NEIMAN,

Dr. to 1 reap. and mower ..... $165 00."

Is there anything in your books to indicate that that was a self-raker?

Ans. Not any more than the price of the machine.

X-int. 370. I find at the left-hand side of that charge, "175;" to what does that refer, if anything?

Ans. That refers to the page in the ledger.

X-int. 371. Will you please produce that ledger and turn to that portion to which those figures refer?

Ans. I have not got it here.

X-int. 372. Will you please produce your ledger at our next session?

(Complainants' counsel states on the record, that not considering a ledger posting from a book of original entry to be admissible proof as to any material fact in this cause, the book of original entry being still in existence, he has not caused it to be produced, and he still remains of that opinion, and accordingly objects to the question and to the production of the said ledger, and to all testimony based thereon; but if defendants' counsel insists on his right to the book the witness is requested to bring it when he returns from dinner, if he has it at his room.)

Defendants' counsel insists that the book be produced.

Ans. I will bring it when I return from dinner.

Recess of one hour for dinner.

time, and don't know if there is any in existence now or not; if there is, I don't know where they are.

X-int. 356. Have you in your possession any of those old 1861 machines, or any parts of the same?

Ans. I have not.

X-int. 357. Do you know of the whereabouts or existence of any of those old 1861 machines, or any parts of the same?

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X-int. 360. Have you in your possession, or have you had since the commencement of this suit, any of the rake-posts belonging to those 1861 machines?

Ans. I have not.

X-int. 361. Did you ever obtain a patent for your 1861 machine; if so, when?

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Defendants' counsel insists that the book be produced.

Ans. I will bring it when I return from dinner.

Recess of one hour for dinner.

2 p. m., taking of testimony resumed. Counsel present as before; witness produces the ledger referred to and submits the same for inspection of defendants' counsel.

X-int. 373. I understand you that those self-rake machines which you built for the 1861 harvest proved a failure, so far as the rake was concerned?

221 Ans. The rake worked well, but it broke, the casting being too weak.

X-int. 374. Did you remodel all those machines so far as the rake was concerned?

Ans. I don't think they were all remodeled. The Stakeley machine was sold as a mower. I don't think they were all remodeled the following year.

X-int. 375. How many of those machines, if any, were paid for as self-rakers?

Ans. Don't think there was any paid the first year as self-rakers.

X-int. 376. What change did you make in those 1861 machines?

Ans. I made the top castings where the cross shafts are in, to which the rake-arms are attached, heavier.

X-int. 377. Did you not change all those 1861 machines after the harvest of that year?

Ans. I don't think they were all changed for the harvest of 1862; some were not changed until 1863.

X-int. 378. State what change you made in those machines for the harvest of 1862.

Ans. They were changed as Exhibit No. 62 shows, if placed on the 1861 machines.

X-int. 379. How much did you lower the rake-post on those machines?

Ans. I am at a loss there, as I haven't got the height of the first post.

X-int. 380. What was the height of the post after you lowered it?

Ans. I cannot tell now, as I have not measured it.

X-int. 381. Did those machines have a seat on for the driver to ride during the operation of reaping?

Ans. No, sir.

X-int. 382. Why did you not put the seat on those machines the same as in the 1861 machines?

222 Ans. Because they were all sold at home there where the seat is not required, as they usually sat on the horse.

X-int. 383. Did you not have a seat on the machine for mowing?

Ans. Yes, sir.

X-int. 384. Did you ever try to ride upon those machines while reaping?

Ans. No, sir; they were not intended to ride on when reaping.

X-int. 385. A man could not have rode upon those machines during the operation of reaping, could he?

Ans. I don't think he could; I have never tried it.

X-int. 386. Can you not give me the exact height of the rake-post on those machines?

Ans. I cannot.

X-int. 387. Does this model No. 62 correctly show the rake-post as it was on those machines?

Ans. I have not compared it, but think it's very near.

X-int. 388. And if put on Model No. 62 it would be in about the same

relative proportion that the rake-post was in the full-size machines, would it not?

Ans. I suppose it would.

X-int. 389. Did you make this Model No. 62.

Ans. No, sir; Mr. Bush made it.

X-int. 390. From what did he make it?

Ans. From a 1862 machine.

X-int. 391. Do you know in what proportion this Model No. 62 is to the 1862 machine from which it was made?

Ans. I do not.

X-int 392. What is the height of the rake-post on that 1862 machine from which this model was made?

Ans. I don't know.

X-int. 393. How many combined machines with the rake-post, as shown in this Model No. 62, did you make for the harvest of 1862?

Ans. There were seven or eight made; I think eight.

223 X-int. 394. To whom did you sell those machines?

Ans. Daniel Smysers got one, William Foss got one, Solomon Crist got one, Isaac King and Christian Dick got one, Zachariah Smyser, George Pressel, and Israel Heilman. My impression is there was eight, but I can't find the other one. Some of these were remodeled machines of 1861 and others were new machines.

X-int. 395. Please point out which were remodeled machines and which were new?

Ans. Israel Heilman's was remodeled; I think Pressel's was remodeled, I can't tell positive, and likely Zachariah Smyser's.

X-int. 396. Why did you lower the rake-post from what it was in the 1861 machine?

Ans. I suppose there was less strain on it, but I raised the rake-post after that again on some machines, and found there was very little, if any, difference on the strain on the castings.

X-int. 397. I wish you would give me the height of the rack-post on those 1862 machines.

Ans. I cannot do it now; I suppose it was from two to two and a half feet high, but have no positive recollection. I recollect that we raised it higher in the 1863 machines, or made it longer.

X-int. 398. How much higher or longer?

Ans. I can't tell.

X-int. 399. Have you any pamphlets or circulars of your 1862 machine; and if so, will you produce the same?

Ans. I have none.

X-int. 400. Were not those 1861 machines used as hand rakers during the latter part of that harvest?

Ans. Some of them.

X-int. 401. In order to use them as hand rakers the self-rake had to be entirely removed, did it not?

Ans. Yes, sir.

X-int. 402. When using those 1862 machines as a mower, did they place the seat back of the axle in the same position as in the 1861 machines when used as a mower?

Ans. I don't know that they placed them back, as most of our farmers were riding the horse in mowing and reaping.

224 X-int. 403. Where was the seat to be located in those 1862 machines when used as a mower?

Ans. There was a place in front of the axle, and one in rear of the

axle, and should have said the 1861 machine was constructed the same way.

X-int. 404. Have you in your possession one of those 1862 machines; and, if so, will you produce the same?

(Complainants' counsel requests the witness to answer, in case he has such a machine, that he has no objections to submitting the machine to inspection of defendants or their counsel whenever they desire to look at it, on reasonable notice.)

Ans. I have one in York, and shall do as my counsel directs me to do.

(Defendants' counsel, now present, is notified that he can examine the machine referred to at any reasonable time he may desire, on reasonable notice, by calling on Mr. Hoffheins, at York, Pa.)

X-int. 405. Is that machine, of which you say you have, one of the remodeled 1861 machines, or is it one that was built especially for the harvest of 1862?

Ans. It is the machine that Solomon Crist bought in 1862; parts of it may have been built in 1861, but it is as the remodeled machine of 1862.

(Defendants' counsel here gives notice that he suspends further cross-examination of the witness in reference to this machine until he has had an opportunity to examine the same.)

(Complainants' counsel desires the cross-examination of this witness to be continued and concluded as speedily as possible, and objects to the suspension referred to, but states he has no objection to defendants calling Mr. Hoffheins as their own witness in reference to said machine, at any reasonable time, on reasonable notice, before the conclusion of complainants' rebutting testimony.)

(Defendants' counsel replies, that during the direct examination the witness was examined in reference to the machines built in 1862, but no allusion whatever was made to this existing machine, on the
225 contrary the same was very carefully avoided, and it was only after persistent and repeated efforts that the same was brought to light. That it now appearing that the machine exists, it is the best and only evidence to the same, and therefore defendants' counsel insists that he has a right, and it is perfectly legitimate for him to cross-examine the witness in reference to the same. That the machine not being produced, and counsel never having seen the same, it is impossible for him to enter upon an examination at this time, and for that reason suspends further cross-examination until an opportunity is afforded him to examine said machine.)

Adjourned to meet Tuesday, May 21st, 1878, at 9 o'clock a. m.

R. H. WHITTLESEY,
Notary Public.

Tuesday, May 21st, 1878, met pursuant to adjournment. Same counsel present as on Saturday, May 18th.

Cross-examination of witness resumed.

(Complainants' counsel states that he made no effort to avoid allusion to the existing machine, and did not produce it because it was not here, and could not be brought here except at great trouble and expense.)

X-int. 406. Did you make any change in the platform of those 1862 machines?

Ans. I think not.

X-int. 407. Was the platform supported the same as in the 1861 machines?

Ans. Partly so; the cutting apparatus and drag-bar were put further away from the driving-wheel, and that brought the suspension of the platform on the inside, near the inner edge of the near driving-wheel; that is, it brought the suspension that much further away from the centre of the machine.

X-int. 408. Did you build any combined machines with self-rake attached for the harvest of 1863?

Ans. Yes, sir.

X-int. 409. How many?

226 Ans. I cannot tell; perhaps thirty or forty.

X-int. 410. Were they of the same construction as the 1862 machines?

Ans. No, sir; not entirely; the rake-driving mechanism was on the grain side of the machine, such as shown in model No. 63. The extension bracket was lengthened out to throw the suspension over again inside of the near wheel; this change, I think, was made in the fall of 1862, or after the harvest of 1862. My impression is the rake post was made a little higher again; there may have been some slight other changes made of which I don't recollect now, as I was constantly trying to improve.

X-int. 411. Are you positive that you raised the rake-post any in those machines you built for the 1863 harvest?

Ans. Yes; at least a greater portion of them.

X-int. 412. How much did you raise the rake-post?

Ans. I can't tell; but I should say from two to four inches.

X-int. 413. Did those machines have a seat upon them?

Ans. Yes; they all had seats. They were not intended for the driver to ride upon when reaping. There may have been a few constructed for the driver to ride on of that kind of machine while the rake was in operation, but I have no positive recollection.

X-int. 414. Did you ever see any one ride upon those machines during the operation of reaping?

Ans. No, sir.

X-int. 415. Where was the seat located on those machines?

Ans. There was two places to locate the seat, one in front of the axle, and the other one in rear of the axle.

X-int. 416. And the seats on those machines, I understand you, were intended to be used when the machine was used as a mower only?

Ans. They were intended to be used as mowers and hand-raking machines, unless there was a few such machines constructed, as before stated, for the driver to ride when reaping, of which I am not positive.

X-int. 417. Could the driver have sat upon those machines built for the 1863 harvest?

227 Ans. No, sir; not unless the few machines referred to, of which I am not positive.

X-int. 418. Did you not get up a different type of machine from those to which you have already referred during the early part of 1863?

Ans. I got up a machine during the early part of 1863 as represented in Exhibit No. 63, excepting the front wooden cross-piece marked Exhibit A was put on since to show the construction of a machine in an interference case.

X-int. 419. That was an iron frame machine, was it not?

Ans. Yes, sir.

X-int. 420. How many of those machines did you construct?

Ans. Two or three; I have only positive knowledge of two.

X-int. 421. Was the platform supported in those two machines the same as in the 1862 and 1863 machines?

Ans. It was supported the same as shown in model No. 63.

X-int. 422. Did you make any alteration or change in the rake-post in the two machines?

Ans. The rake-post was made high enough for a driver to ride on while the rake was in operation.

X-int. 423. How do you know that?

Ans. Because I was sitting on it myself and saw other parties sitting on it while the rake was revolved over their heads, and on one of them I was sitting myself and drove the horses while cutting grain.

X-int. 424. Did you ever see any one else ride upon either of those machines during the operation of reaping?

Ans. I have no positive recollection of seeing any one else.

X-int. 425. Where was the seat located at the time you occupied it while cutting grain?

Ans. That seat I think was located on the tongue, in front of the near driving-wheel.

X-int. 426. Was that seat the same as those used on the 1862 and 1863 machines for mowing?

Ans. About the same.

228 X-int. 427. Where was the seat located in those two machines when the same was to be used as a mower?

Ans. On the extension of the metal extending back from the centre of the main frame directly back of the axle.

X-int. 428. Did you ever occupy the seat, or see any one occupy the seat, during the operation of reaping, when so located?

Ans. No, sir; not to my recollection.

X-int. 429. I observe on the model No. 63, a seat extending out on a spring; was the seat so located in either of those iron frame machines?

Ans. It was so located in the machine that was sent to the Maryland Institute, and afterwards sold to Mr. Shireman, and the one he produced at Philadelphia and states was the same machine.

X-int. 430. For what was the seat to be used when so located on that machine?

Ans. For the driver to ride on while cutting grain.

X-int. 431. Did you ever see any one occupy that seat when so located, during the operation of reaping?

Ans. No, sir; I have not seen that machine tried at all in grain.

X-int. 432. What was the height of the rake-post in those two iron frame machines?

Ans. There is none of them in existence, to my knowledge; but I have a rake-post of an 1864 machine which I think is about the same height, as I believe it was made over the same pattern; and that is either two feet eleven and three-eighths inches, or two feet eleven and five-eighths. Exhibit 64 is a sample of it, and in proportion to two inches to the foot.

X-int. 433. Is not the rake-post in the model 63 in the same relative proportion to the various parts of the model as the rake-post was in those two machines?

Ans. I think it's a fraction lower; with that exception it's about the same proportion.

X-int. 434. Can you give no more definite idea as to the exact height of the rake-post?

Ans. No, sir; not at present.

229 X-int. 435. When was it that you tried the first one of those two iron frame machines?

Ans. I can't fix the precise time. It was likely about the latter part of July; it was in the oats.

X-int. 436. Was the rake arranged in precisely the same manner as it would have been for cutting wheat or rye?

Ans. Yes; about the same.

X-int. 437. How long a time did you occupy the seat while cutting oats?

Ans. That I can't tell. My impression now is I got off and somebody else got on, but I am not positive.

X-int. 438. Was the rake in operation while you occupied the seat?

Ans. Yes, sir; the machine was cutting and the rake was raking off.

X-int. 439. Who was present during that trial?

Ans. From my own recollection, it is hard to tell; but think a good many of the shop hands; Mr. Jacob B. Fink, and, I think, Reuben Lauer was present, and others which I don't recollect.

X-int. 440. How much space was there above your head and the beater?

Ans. I don't know, as I think in that rake the frame of the machine was long enough; that the rake passed behind the driver.

X-int. 441. From that I understand you that the seat was without the circumference of the rake, so that the rakes passed behind and not over the driver?

Ans. Yes, sir.

X-int. 442. Did you continue to build combined machines with self-rake for the harvest of 1864?

Ans. Yes, sir.

X-int. 443. How many did you build for that harvest?

Ans. Probably fifty or sixty.

X-int. 444. Were they not the same as the 1862 and 1863 machines?

230 Ans. They were the same as the wooden frame machines of 1863, excepting the three as stated in my former testimony were built with seat for the driver to ride on while reaping. With the exception of those three, and perhaps a few more, they had no seats on for reaping.

X-int. 445. In your last answer you refer to three machines as differing from others built for that harvest. Wherein did they differ?

Ans. If the rake-post, Exhibit No. 64, was placed on the 1861 machine, and the rake-driving mechanism put on the near side of the main frame, and the U-shaped spring on the front cross-bar where I marked the letter U in ink, then that would represent the 1864 machine.

X-int. 446. And the rake-post No. 64 would be in the same relative proportion to the various parts of the model No. 61 as the rake-post in the full size machine was to the various parts of the said machine?

Ans. About, or nearly so.

X-int. 447. Had those three machines a seat on to be used during the operation of reaping?

Ans. Yes, sir.

X-int. 448. Where was the seat located when to be so used?

Ans. On the front cross-bar where I marked the letter U.

X-int. 449. Was there a place on those machines for the seat directly back of the axle?

Ans. Yes, sir.

X-int. 450. And was not the seat so located for mowing?

Ans. It could be located there or in front of the axle; it usually occupied the rear place back of the axle.

X-int. 451. What was the height of the seat on those three machines?

Ans. I don't know; I should say about six or eight inches.

X-int. 452. How do you fix the height?

Ans. Only from remembrance.

X-int. 453. Was the seat as high as the S-shaped seats that you used on the other machines?

231 Ans. No, sir.

X-int. 454. Why did you change the height of the seats?

Ans. Because we used a lower rake-post.

X-int. 455. Did you furnish two seats with those machines?

Ans. Yes, sir; one was an S-shape and one a U-shape.

X-int. 456. You furnished the U-shape to be used for reaping, and the S-shape for mowing, did you not?

Ans. Yes, sir.

X-int. 457. Could the driver have occupied the S-shaped seat during the operation of reaping without being struck?

Ans. That depends on the height of the S-shaped seat; we had different heights. If the lower S shaped spring had been used, I think the driver could have occupied the seat while reaping.

X-int. 458. Did you ever see anybody occupy the seat on either of those three machines during the operation of reaping?

Ans. No, sir; neither in reaping or mowing.

X-int. 459. I understand you that two of those three machines sold by you had the rake-post lowered?

Ans. Yes, sir.

X-int. 460. Do you know how much they were lowered?

Ans. No, sir.

X-int. 461. Do you know if the rake-post was lowered on the third machine?

Ans. It was not; that machine was used, as I am informed by letter, for many years in that way.

X-int. 462. You have stated that the machine produced in this case by Mr. Joseph H. Shireman is not, and was not at the time he produced the same, the same as when you furnished it to him. Is that so?

Ans. To the best of my recollection it is.

X-int. 463. In what respect do you say that machine has been altered?

Ans. I think the rake-post was shortened.

X-int. 464. How do you know that the rake-post had been altered?

232 Ans. I know, if that's the machine that Shireman got from me as a sample machine to build by, as he states it is, that the rake-post was shortened, because it was high enough when he got it from me for a driver to ride on while the rake was in operation.

X-int. 465. Then you do not know that the rake-post in that machine has been altered?

Ans. If it is the same machine, and I have reason to believe it is, then the rake-post has been shortened.

X-int. 466. Have you any doubt that it is not the machine which you furnished him?

Ans. I have not as to the running part of the machine, but the rake-post, I believe, is not the same one that was on when he got the machine.

X-int. 467. Are you willing to swear that the rake-post on that machine is not the same one that you put on when you built the machine?

Ans. I am not willing to swear that it is not the same rake-post, but I am willing to swear if it's the same rake-post it was shortened.

X-int. 468. Did you see it shortened?

Ans. No, sir.

X-int. 469. Do you know, of your own knowledge, that it was shortened?

Ans. I know the machine had a higher post when I sent it to the Maryland Institute than it has now in Philadelphia, when I saw it last.

X-int. 470. How do know you that?

Ans. Because I know the post was high enough for a driver to ride on it.

X-int. 470¼. And is that the only reason you have for saying the rake-post has been altered?

Ans. No; I can see it readily, by looking at the machine, from my own memory.

X-int. 471. Then, 'tis merely a matter of opinion with you as to the rake-post having been altered, is it not?

233 Ans. No, sir; it was either altered, or a shorter one put on.

X-int. 472. Have you any personal knowledge that such is the case?

Ans. I have seen no one do it, but I know it was done, because I know the post was higher in 1863 than it was when I saw it in Philadelphia.

X-int. 473. Is that the only reason you can give?

Ans. The different reasons I have mentioned before, and my recollection of that machine being fixed so a driver could ride on it, enable me to fully satisfy myself it was changed.

X-int. 474. What was the exact size of the rake post on that machine at the time you gave it to Mr. Shireman?

Ans. I have nothing now to fix the exact height.

X-int. 475. Have you ever testified before in reference to your alleged inventions, for which you received patents in 1862 and 1863?

Ans. Not to my recollection.

X-int. 476. I notice in one or two of the letters which you have produced, some mention is made of a caveat. Did you ever file a caveat in connection with your alleged inventions for which you obtained letters patent in 1862 and 1863?

Ans. I don't think I did; not to my present recollection.

X-int. 477. Did you continue to build combined machines with self-rakes for the harvest of 1865?

(Objected to.)

Ans. I sold out my manufacturing interests in the fall of 1864, or the winter of 1865, I don't recollect the date.

X-int. 478. Did you not obtain a patent for the improvement in combined rake and reel attachment to harvesters in 1865?

(Objected to.)

Ans. Yes, sir.

X-int. 479. After selling your place, in 1864, did you again engage

in the business of manufacturing agricultural implements; if so, when and where?

Ans. I commenced in York, for the harvest of 1866.

234 X-int. 480. Did you build combined machines for that harvest?

Ans. Yes, sir.

X-int. 481. Were they not constructed in accordance with patent granted you in July, 1865?

(This line of inquiry objected to as not proper line of cross-examination.)

Ans. Some of them, and some were similar to the 1863 patent, with some slight changes.

X-int. 482. How many did you build for that harvest, and what was the proportion of each?

Ans. I cannot tell how many we built, but think they were most of the 1865 machines.

X-int. 483. About how many did you build in accordance with the 1863 patent?

Ans. I cannot tell. We built probably thirty or forty of them.

X-int. 484. Were not the rakes in those machines arranged in accordance with your 1865 patent?

Ans. Not on the 1863 machines.

X-int. 485. Did the rakes sweep over the main frame, the same as shown in Model No. 63?

Ans. Yes, sir.

X-int. 486. After that harvest did you not discontinue arranging the rake as shown in the 1863 patent and Model No. 63, and construct them in accordance with your 1865 patent?

Ans. Yes; we got to building more of the 1865 machines, as it was a lighter machine, and was more in demand. We still build a few of the 1863 machines.

X-int. 487. When did you entirely discontinue building machines with the rake constructed as shown in your 1863 patent and Model 63, in which the rakes swept entirely over the main frame?

Ans. I can't tell; there was but few of them built after 1867.

(Defendants' counsel here offers in evidence, to be used at the hearing, the ledger produced by the witness, Hoffheins, at our last session, and is marked "Defendants' Exhibit, Hoffheins' ledger." R. H. Whittlesey, examiner.)

R. H. W., *Notary Public.*

235 X-int. 488. You have produced certain letters written you by Munn & Co., in reference to making application for a patent; are those all the letters you have bearing upon that subject?

Ans. All I could find. My letters were all filed in a nice condition; in moving from Dover to York they got all mixed up. I hunted over all I could find bearing on this subject.

X-int. 489. Have you any other letters, other than you have produced, received by you from your agent, Samuel Leonard, between the period 1859 and 1863?

Ans. There may be some at home, but not bearing on this subject.

X-int. 490. Will you produce those letters for inspection at our next session, that counsel may see whether or not they have any bearing upon, or relate to the same subject?

Ans. All my correspondence is mixed up; about a bushel of it. I will try and select them out and put them in the hands of my counsel for your inspection.

X-int. 491. I notice among the letters which you have produced several letters written by yourself to your agent, Samuel Leonard; how did you come in possession of those letters, and when?

Ans. I wrote to Mr Leonard about the time of one of my interference cases to return to me all letters written by me in his possession relating to my self-rake.

X-int. 492. Are the letters you have produced all you have received from him?

Ans. Yes, sir.

X-int. 493. Have you in your possession either of the three machines that you constructed for harvest of 1864?

Ans. I have one; the one sold to Mr. Bell.

X-int. 494. Will you please produce the same for inspection of counsel?

Ans. I am willing counsel shall look at it at any time.

X-int. 495. Where is that machine, and where can it be found?

Ans. It is on my farm in Weiglestown, York County, Pa.

236 X-int. 496. Is that the machine from which Exhibit No. 64 was made?

Ans. Yes, sir.

(Defendants' counsel states, that its having been shown that one of the original 1864 machines is in existence and in possession of the witness, and the witness having been examined in reference to the three machines of which this is one, further cross-examination in reference to the same is suspended until an opportunity is afforded counsel to examine the said machine. That counsel will examine at his earliest opportunity this machine, as well as the machine of 1862 in reference to which cross-examination was also suspended, and as soon as he has done so, will notify complainants' counsel to produce the witness for further cross-examination.)

Complainants' counsel makes the same reply as he made to a previous entry of like character.

Redirect by Mr. CHRISTY:

Int. 497. What particular object had you in view in getting up the machine described in your 1865 patent?

(Objected to as immaterial.)

Ans. I wanted to get up a lighter machine, a machine that I could regulate the gavels in size; also, a machine that I could regulate the height of cut of the stubble while the machine was in operation.

Int. 498. Did you continue making and selling Ball hand-rakes in 1862–'3?

Ans. Yes, sir.

Int. 499. In your answer to cross-interrogatory 154, you speak of the Wood chain-rake, and the Morgan rake; were these, or either of them, continuously-revolving rakes, such as in their return motion passed over the main frame of the machine?

Ans. No, sir.

Int. 500. Did you ever have any intention of applying the Dorsey rake to a machine having a cutting apparatus and platform rigidly connected with the main frame?

237 (Objected to.)

Ans. No, sir.

Int. 501. In your answer to cross-interrogatory 212, you say the machine tried in the green rye was a Ball machine. Do you mean that it was a Ball hand-raker, or a Ball machine with your improvements added?

(Objected to as leading.)

Ans. It was a Ball machine as far as the truck of the machine and the cutting apparatus was concerned, with a circular or a quadrant-shaped platform, as it is generally called, with my self-rake added.

Int. 502. Was the machine which was set up at the Mutter House, in York, afterwards taken back to the shop and remodeled in like manner as the other 1861 machines?

(Same objection.)

Ans. Yes, sir.

Int. 503. You have spoken in answer to cross-question 415, about two positions for the seat, one in front of the axle and one in the rear. Please mark with the pen, on model No. 61, with the letter S, the position of the seat forward of the axle referred to in that answer?

Ans. I have done so. I might add, that position was in all machines for shifting the seat built in 1860, 1861, 1862, 1863 and 1864, whether hand or self-rakes. There was two holes bored through the frame to which it could be bolted.

Int. 504. Was the machine referred to in your answer to cros-interrogatory 461, the machine you sold to Bell?

Ans. Yes, sir.

Int. 505. Were you an expert book-keeper along early in the sixties?

(Objected to as immaterial.)

Ans. No, sir.

Int. 506. Did you make your ledger postings promptly, or did you sometimes wait a good while and do it while you had leisure?

(Same objection; also, new matter.)

238 Ans. I did that at idle times.

Int. 507. In settling up or closing accounts, did you sometimes make memoranda on the ledger, without entering them on the day-book at all?

(Objection continued.)

Ans. Yes, sir.

REUBEN HOFFHEINS.

Adjourned until further notice.

R. H. WHITTLESEY,
Examiner and Notary Public.

239 United States circuit court, northern district of Ohio.

R. HOFFHEINS ET AL.
vs.
C. RUSSELL & CO. ET AL. } In equity.

Proofs for final hearing taken on the part of the complainants in this cause, under and pursuant to the 67th rule of U. S. courts, in equity, before George M. Shelter, esq., notary public, as special examiner.

YORK, PA., *April* 30, 1878.

Present, George H. Christy, esq., of counsel for complainants, George Harding and John R. Bennett, for defendants.

ISRAEL BOYER, a witness produced on the part of complainants, being first duly sworn, in answer to interrogatories propounded, deposes and says as follows:

Int. 1. State your name, age, residence, and occupation.

Ans. Israel Boyer; fifty-one years; Baltimore County, Maryland, ten miles from the city of Baltimore; am a hotel keeper by occupation.

Int. 2. Do you know Reuben Hoffheins; and if so, how long have you known him?

Ans. I have known him since my boyhood.

Int. 3. What was his business in 1861, and where did he carry on business?

Ans. He was building reapers and mowers, at Dover, York County, Pennsylvania.

Int. 4. Did you get a machine from him that year; and if so, what kind of a trade did you make with him?

240 Ans. I traded him a Ketchum for a Ball machine.

Int. 5. What time in the year, or when was it you made this trade?

Ans. It was in May, 1861.

Int. 6. At the time of making that trade did you see a machine of his, or which he claimed to have gotten up, having a revolving rake?

Ans. I did.

Int. 7. Where did you see it?

Ans. In his shop, at Dover.

Int. 8. Was it a full-sized machine?

Ans. Yes; it was.

Int. 9. Was it set up apparently in working condition, or was it lying around in detached pieces?

(Objected to.)

Ans. It was set up in working condition.

Int. 10. How many drive-wheels had it?

Ans. Two.

Int. 11. Was the main frame of wood, or of iron?

Ans. The main frame was wood.

Int. 12. Was the tongue rigidly connected with the main frame, or was it jointed?

(Objected to.)

Ans. It was a stiff tongue; it was bolted to the main frame.

Int. 13. Was it a combined machine adapted to both mowing and reaping?

(Objected to.)

Ans. Yes; it was a combined machine.

Int. 14. Was the grain platform hinged to the main frame, or did it have a stiff connection with the main frame?

Ans. It was hinged.

Int. 15. How many revolving rakes did the machine have?

Ans. Two, and two beaters.

Int. 16. Was there a seat for the driver?

Ans. Yes, sir; there was.

241 Int. 17. Whereabouts was it located?

Ans. On the right front of the main frame.

Int. 18. Could a man sit on that seat and drive without being struck by the rake or beater heads as they came over?

Ans. Yes, he could.

Int. 19. What did you do to make sure of that fact?

Ans. I sat on the seat when Mr. Hoffheins revolved the rakes; they cleared my head and hat.

Int. 20. How tall are you?

Ans. Five feet eleven inches and a half.

Int. 21. Whereabouts on that machine was the rake-post located?

Ans. It was located on the platform.

(Objected to as leading.)

Ans. It was a Ball machine as far as the truck of the machine and the cutting apparatus was concerned, with a circular or a quadrant-shaped platform, as it is generally called, with my self-rake added.

Int. 502. Was the machine which was set up at the Mutter House, in York, afterwards taken back to the shop and remodeled in like manner as the other 1861 machines?

(Same objection.)

Ans. Yes, sir.

Int. 503. You have spoken in answer to cross-question 415, about two positions for the seat, one in front of the axle and one in the rear. Please mark with the pen, on model No. 61, with the letter S, the position of the seat forward of the axle referred to in that answer?

Ans. I have done so. I might add, that position was in all machines for shifting the seat built in 1860, 1861, 1862, 1863 and 1864, whether hand or self-rakes. There was two holes bored through the frame to which it could be bolted.

Int. 504. Was the machine referred to in your answer to cros-interrogatory 461, the machine you sold to Bell?

Ans. Yes, sir.

Int. 505. Were you an expert book-keeper along early in the sixties?

(Objected to as immaterial.)

Ans. No, sir.

Int. 506. Did you make your ledger postings promptly, or did you sometimes wait a good while and do it while you had leisure?

(Same objection; also, new matter.)

238 Ans. I did that at idle times.

Int. 507. In settling up or closing accounts, did you sometimes make memoranda on the ledger, without entering them on the day-book at all?

(Objection continued.)

Ans. Yes, sir.

REUBEN HOFFHEINS.

Adjourned until further notice.

R. H. WHITTLESEY,
Examiner and Notary Public.

239 United States circuit court, northern district of Ohio.

R. HOFFHEINS ET AL.
vs.
C. RUSSELL & CO. ET AL.
} In equity.

Proofs for final hearing taken on the part of the complainants in this cause, under and pursuant to the 67th rule of U. S. courts, in equity, before George M. Shelter, esq., notary public, as special examiner.

YORK, PA., *April* 30, 1878.

Present, George H. Christy, esq., of counsel for complainants, George Harding and John R. Bennett, for defendants.

ISRAEL BOYER, a witness produced on the part of complainants, being first duly sworn, in answer to interrogatories propounded, deposes and says as follows:

Int. 1. State your name, age, residence, and occupation.

Ans. Israel Boyer; fifty-one years; Baltimore County, Maryland, ten miles from the city of Baltimore; am a hotel keeper by occupation.

Int. 2. Do you know Reuben Hoffheins; and if so, how long have you known him?

Ans. I have known him since my boyhood.

Int. 3. What was his business in 1861, and where did he carry on business?

Ans. He was building reapers and mowers, at Dover, York County, Pennsylvania.

Int. 4. Did you get a machine from him that year; and if so, what kind of a trade did you make with him?

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Int. 5. What time in the year, or when was it you made this trade?

Ans. It was in May, 1861.

Int. 6. At the time of making that trade did you see a machine of his, or which he claimed to have gotten up, having a revolving rake?

Ans. I did.

Int. 7. Where did you see it?

Ans. In his shop, at Dover.

Int. 8. Was it a full-sized machine?

Ans. Yes; it was.

Int. 9. Was it set up apparently in working condition, or was it lying around in detached pieces?

(Objected to.)

Ans. It was set up in working condition.

Int. 10. How many drive-wheels had it?

Ans. Two.

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Ans. The main frame was wood.

Int. 12. Was the tongue rigidly connected with the main frame, or was it jointed?

(Objected to.)

Ans. It was a stiff tongue; it was bolted to the main frame.

Int. 13. Was it a combined machine adapted to both mowing and reaping?

(Objected to.)

Ans. Yes; it was a combined machine.

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Ans. On the right front of the main frame.

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Ans. Yes, he could.

Int. 19. What did you do to make sure of that fact?

Ans. I sat on the seat when Mr. Hoffheins revolved the rakes; they cleared my head and hat.

Int. 20. How tall are you?

Ans. Five feet eleven inches and a half.

Int. 21. Whereabouts on that machine was the rake-post located?

Ans. It was located on the platform.

Int. 22. How near was the lower end of the rake-post to the heel of the cutter-bar?

Ans. It was right at the heel; I don't know whether it was on it or not.

Int. 23. Look at the model now shown you and state how, in the features you have described, the model compares with the machine you saw in Hoffheins' shop in May, 1861. Is it the same or different?

(Question objected to as leading.)

Ans. It is the same machine, as near as I can recollect.

Int. 24. I forgot to ask you about the driving gear and shaft which run the rake. How did that compare with what the model shows?

(Counsel for plaintiffs points out with his finger on the model the part of the machine to which he alludes.)

(Counsel for defendants objects to counsel for plaintiffs leading the witness in this way.)

(Counsel for complainants says that he is unable to see anything leading, in any legal sense, in anything that he has done.)

Ans. It compares with the model.

Int. 25. Do you mean the same or different?

(Question objected to.)

Ans. The same.

242 (The model above referred to is offered in evidence, and marked Complainants' Exhibit No. 61.—G. F. S., notary public.)

Int. 26. What was your business in 1861?

Ans. Farming.

Int. 27. How do you know that it was in May, 1861, that you saw this machine at Hoffheins' shop, as you have testified?

Ans. Well, I know that I traded that Ketchum machine for the Ball machine in that month and that year; I know it by a note I have, which I gave Mr. Hoffheins.

Int. 28. State what the bargain was when you made the trade.

Ans. Well, the bargain was that I should pay him part of the money after harvest, and give him a note for the balance.

Int. 29. Did you give a note for the balance?

Ans. Yes, sir; I did.

Int. 30. What was the date of that note?

Ans. As near as I can recollect, it was the 28th of August, 1861.

Int. 31. Are you sure about the month and year?

Ans. Yes, sir.

Int. 32. How long since you looked at that note?

Ans. It is about two weeks ago.

Int. 33. Do you remember whether you made that trade with Hoffheins before you cut your grass that year?

(Objected to.)

Ans. I did.

Int. 33½. Was the Ball machine you got a combined machine?

Ans. Yes; it was.

Int. 34. In that Ball machine, how was the grain removed from the platform?

Ans. By a hand-rake.

Int. 35. Do you remember of getting any one to help you change the machine that first year from a mower to a reaper?

Ans. I do.

Int. 36. Do you remember who helped you?

Ans. E. Lauer helped me; he was a machinist working for Hoffheins.

243 Cross-examined by GEORGE HARDING, Esq., for defendants:

X-int. 1. How long were you in the shop when you saw this machine?

Ans. Well, I don't recollect, but I may have been there five hours.

X-int. 2. What were you doing there during the five hours? How did you occupy yourself?

Ans. Well, we were trading machines at the time.

X-int. 3. Did it take five hours to make the trade?

Ans. Well, I don't say it took five hours to make the trade, but I was at the shop about that length of time.

X-int. 4. When did you next go to the shop?

Ans. I don't know.

X-int. 5. Did you go that year again?

Ans. Yes, sir.

X-int. 6. What for?

Ans. I went there to fetch my machine.

X-int. 7. When was that?

Ans. I can't say the day; it might have been the first day of June, 1861.

X-int. 8. When did you next go to the shop?

Ans. When I was ready to cut grain. It was in the beginning of July when we commenced reaping; at about the 3d or 4th of July.

X-int. 9. What did you go for then?

Ans. For a hand to start the machine in grain.

X-int. 10. When did you next go to the shop?

Ans. I don't know.

X-int. 11. Did you go again that year after that?

Ans. I had been at the shop the year around, off and on, but I can't recollect the time.

X-int. 12. What took you there the year around, off and on?

Ans. I had my repairing done at his shop.

X-int. 13. When did you next see the machine at Hoffheins' shop, after the first time?

244 Ans. Well, I had seen it nearly every time I was at thes hop.

X-int. 14. When did you first see the machine outside of the shop, if ever?

Ans. I seen it outside, but I don't know when or at what time.

X-int. 15. Where was it that you first seen it outside of the shop?

Ans. I can't say just where.

X-int. 16. Can you state anywhere you saw it outside of the shops?

Ans. I can't answer that question.

X-int. 17. Did you see that machine, or one like it, work?

Ans. I can't tell where I seen the first one work any more.

Question repeated. Yes, I see them all work, but I don't know; that is not my idea. I saw the machine work; that is, not all of them. I seen his machine work, and I worked with them.

X-int. 18. Tell me any place where you can recollect seeing the machine work?

Ans. I seen the machine work at my next neighbor's, J. F. Bowersox.

X-int. 19. Was the machine you saw there like the one you saw in Hoffheins' shop?

Ans. I don't recollect that.

X-int. 20. How often did you see your neighbor Bowersox's machine?

Ans. I can't tell how often I seen it.

X-int. 21. Did you see it often or seldom?

Ans. I can't say how often I helped to work with it.

X-int. 22. Was that the first machine of that kind you ever helped to work with?

Ans. It was.

X-int. 23. How long after you saw the machine at Hoffheins' shop was it that you helped to work that machine?

Ans. I don't know how long it was.

X-int. 24. Was it the same summer or the next summer?

Ans. It wasn't the same summer.

245 X-int. 25. Was it the next summer?

Ans. I don't recollect. I don't want to tell you anything that I don't know.

X-int. 26. Was it the second summer after?

Ans. I can't tell was it two or three years after.

X-int. 27. Why do you say it was in May you saw this machine at Hoffheins' shop?

Ans. I know it was a good while before mowing time. I brought my machine home in June, and I traded for it in May.

X-int. 28. How do you know you traded for that machine in May?

Ans. I know it's so. I know it was in May I traded for the machine.

X-int. 29. What enables you to be positive that it was in May you traded for the machine?

Ans. I know it of my own knowledge in my own mind, that it was in May—in the latter part of May.

X-int. 30. How often had you been at Hoffheins' shop before the month of May, in that year, 1861?

Ans. I don't know. I may have been there every month once or twice, to the best of my knowledge.

X-int. 31. What did you go there for on those previous occasions?

Ans. I had my repairing done there. I went most of the time on business.

X-int. 32. What kind of business?

Ans. I went there sometimes to get some castings, or get some work done.

X-int. 33. Castings for what?

Ans. To repair farming implements.

X-int. 34. How do you know the machine was shown to you at the time you traded machines, as stated?

Ans. Well, I seen the machine in the shop at that time.

X-int. 35. Can you give no other reason for this knowledge than that contained in your last answer?

246 Ans. I can't give no other reason; I had to see the machine, for I was right by it.

X-int. 36. Do you know this in your own mind, in the same way that you know in your own mind that it was in May?

Ans. I can't understand the question.

X-int. 37. Are you as certain that it was in May that you first saw this machine, as you are certain that you saw it at the time you traded?

Ans. I am certain that it was in May, I first saw this machine at the shop, and that I traded at the same time.

X-int. 38. Suppose that it was not until July you first saw this machine, would you still be certain that you saw it at the time you traded for the machine?

Ans. I am certain that I saw it in May when I traded.

X-int. 39. Describe to me how the machine you saw at Bowersox's was driven?

Ans. I don't recollect that; it was driven just as this machine is, with two drivers.

X-int. 40. How was the rake driven on that machine?

Ans. I don't recollect.

X-int. 41. What became of that machine?

Ans. It was sold at public sale.

X-int. 42. How many years was it used before it was sold by Mr. Bowersox or yourself?

Ans. I don't know.

X-int. 43. How came you to help use it?

Ans. I worked in harvest for him.

X-int. 44. How long did you work in harvest for him?

Ans. One week.

X-int. 45. What year?

Ans. Don't recollect.

X-int. 46. How were the horses driven in that machine during that week?

(Objected to, as indefinite, and meaningless.)

Ans. I don't know how they were driven; I didn't drive them; do you mean fast or slow, or by check, or how?

247 X-int. 47. Where was the man who drove them?

Ans. To the best of my knowledge, he was on the saddle-horse.

X-int. 48. What makes you think he was on the saddle-horse?

Ans. Well, while he drove four horses he couldn't walk on the grain.

X-int. 49. Are you sure he drove four horses?

Ans. I am.

X-int. 50. Where was the next machine you saw after this, of that kind—after Bowersox's?

Ans. Can't tell whose I saw next; I saw a good many after this in the neighborhood.

X-int. 51. Did you ever own one yourself, or use one after that?

Ans. What kind?

(Mr. Harding says: A machine of the kind of which we are speaking; like Bowersox's.)

Ans. I never owned one, and I never used one after that.

X-int. 52. Then, am I to understand you that you never used a machine with Hoffheins' rake upon it, except for the week you worked at Bowersox's?

Ans. Yes; correct.

X-int. 53. From the time that you saw that machine in Hoffheins' shop, down to the time of giving your testimony here, has your attention been called in any way to the subject, or to that visit?

Ans. I had been witness here for Hoffheins before this day, on that machine.

X-int. 54. How many times?

Ans. Twice, if I ain't mistaken, before this.

X-int. 55. When did you first see this exhibit model (Exhibit 61)?

Ans. I don't recollect when I saw it first; I can't tell.

X-int. 56. Did you see it before giving your testimony to-day?

Ans. I don't know as I seen this one before to-day; I seen models; I seen Exhibit A before to-day.

X-int. 57. When did you see Exhibit A?

248 Ans. I can't tell when I seen it.

X-int. 58. On what occasion, and under what circumstances was it shown to you, and by whom (Exhibit A)?

X-int. 22. Was that the first machine of that kind you ever helped to work with?

Ans. It was.

X-int. 23. How long after you saw the machine at Hoffheins' shop was it that you helped to work that machine?

Ans. I don't know how long it was.

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X-int. 55. When did you first see this exhibit model (Exhibit 61)?

Ans. I don't recollect when I saw it first; I can't tell.

X-int. 56. Did you see it before giving your testimony to-day?

Ans. I don't know as I seen this one before to-day; I seen models; I seen Exhibit A before to-day.

X-int. 57. When did you see Exhibit A?

248 Ans. I can't tell when I seen it.

X-int. 58. On what occasion, and under what circumstances was it shown to you, and by whom (Exhibit A)?

Ans. Exhibit A was shown to me here in the office at Hoffheins'; it was shown to me when I was a witness, one year—not this day.

X-int. 59. How long ago was it shown to you, when you were a witness, according to your best recollection?

Ans. I don't know; I can't tell you that; I don't know how long it is.

X-int. 60. Was it one year, or five years ago?

Ans. I can't tell you.

X-int. 61. Was it shown to you, as a witness, more than five years ago, or more than ten years ago?

Ans. Well, I can't recollect; I don't want to say anything that I don't know.

X-int. 62. On that occasion how long were you on the stand as a witness?

Ans. I don't recollect.

X-int. 63. Were you as much as an hour, or as much as a day?

Ans. I don't recollect how long; I don't recollect whether it was a day or not.

X-int. 64. Do you recollect whether you were examined for an hour?

Ans. I told you before I couldn't tell how long I was examined; I don't know how long I was examined.

X-int. 65. How often have you been examined as a witness, in this way, in your life, in all cases by written deposition before an examiner?

(Objected to as immaterial.)

Ans. I am not able to tell you that.

X-int. 66. Have you ever been examined in this way, except on the two occasions when you have testified as to this old machine of Hoffheins'?

Ans. I don't know as I have in this way.

249 X-int. 67. Have you ever been examined as a witness in any other way, and if so, in what way?

Ans. I have been witness, but not examined in this way. Never was a witness in court.

X-int. 68. Where was it that you was examined in another case?

(This line of cross-examination objected to, for the reason that the matters inquired of are wholly immaterial and irrelevant to any matter at issue in the cause; also, as being utterly frivolous and unnecessarily encumbering the record, and because the questions are apparently asked for the purpose of exhausting the patience of all parties interested, after all material matters have been fully inquired into.)

Ans. I don't know as I was examined in any other case, but just called as witness.

X-int. 69. When was that you were called as a witness?

Ans. It was in the country.

X-int. 70. More than once?

Ans. I don't recollect.

X-int. 71. Describe to me how you are enabled, at the expiration of seventeen years, to remember the way in which the rake-head on this machine was driven?

Ans. I have got nothing to remember it but my mind and that I seen it.

X-int. 72. I observe that the chain, by which the platform is suspended, is hooked in a certain position. Do you now remember distinctly that that hook, on the original machine, was in the same place that it is on this model relatively to the whole?

Ans. I know that it was on the front there; I don't know that it was in the same position.

X-int. 73. Do you know whether the rake-post on that old machine was the same height exactly as the rake-post in this model, in proportion?

Ans. I suppose it was.

X-int. 74. On the former occasion, or first occasion, when you
250 were examined in reference to this old machine of Hoffheins', which you saw at his shop, didn't the Exhibit A, which was then shown you as representing the old machine, contain a strip extending out in front of the main frame, on which strip the driver's seat was placed?

Ans. I don't recollect that.

X-int. 75. If that Exhibit A, then shown you, had on a strip extending out from the platform, on which the driver's seat was placed, would it have been a correct representation of the old machine, in that respect, as you first saw it?

Ans. I can't answer you that question.

X-int. 76. What time this morning were you first shown this model Exhibit 61, and by whom?

Ans. It was sitting in the room here, on the table, when I came here. It showed it to me itself; it was sitting right here, on the table, and I walked right up to it.

X-int. 77. Was anbybody present at any time when you examined it, or when it showed itself to you, before giving your testimony to-day?

Ans. It was.

X-int. 78. Who was present?

Ans. Mr. Hoffheins and his counsel, Mr. Christy, were present.

X-int. 79. Are you willing to swear, after the lapse of seventeen years, that the driver's seat in that old machine of Hoffheins', that you saw at Hoffheins' shop, was not placed on a strip extending out from the front of that machine?

Ans. I am not positive where it was on; I will not take oath to it.

X-int. 80. Were you not asked, when called as a witness in the interference case between Hoffheins and Reese, in 1864, when did you first examine a full-sized reaping machine, the invention of Reuben Hoffheins, and which is reputed to have formed the subject of a patent granted to him on or about the third day of November, 1863, and did you answer, in 1861, about the third week in June, and if you did so answer, did you answer truly?

251 (A certified copy of the record of the said interference is shown to the witness.)

Ans. I don't know whether I did or not.

X-int. 81. If you did, was it the truth?

Ans. I seen the machine more than once, and, if I did say so, it was the truth.

X-int. 82. If you did say, in that former deposition, that the first time that you saw the full-sized complete machine was the third week in June, do you think that was the truth?

Ans. I might have seen her out there in June cutting green rye.

X-int. 83. How do you know they had her out there cutting green rye?

Ans. Well, what I know about it I heard other people say that saw them cut; I didn't see them cut.

X-int. 84. How long after you suppose you saw the machine was it that this cutting of the green rye was to which you refer?

Ans. I don't know.

X-int. 85. What made you say that you thought your former testimony as to June, 1861, had relation to the cutting of the green rye?

Ans. I can't understand the question; I can't give you any answer.

X-int. 86. Where was this cutting?

Ans. It was at Dr. Lenhart's farm, in Dover.

X-int. 87. Had you occasion to go to Mr. Hoffheins' shop in 1862 and 1863?

Ans. I had occasion to go to his shop every year, as long as he kept his shop there.

X-int. 88. On the old machine which you saw there, was there not a strip extending out from the outer corner of the front of the main frame on which the driver's seat was placed?

Ans. I can't recollect.

X-int. 89. Was there not a strip there?

Ans. I can't recollect.

252 X-int. 90. When and where did you ever see a man sitting on a Hoffheins machine driving while reaping?

Ans. I never saw that in my neighborhood; they all had four horses to work the machine.

X-int. 91. Did you ever see the machine work with two horses?

Ans. None of my neighbors; not in grain; never saw two horses used in grain by anybody to that machine.

(On account of the lateness of the hour, and the fact that the witness has to return home at a considerable distance by private conveyance, his signature is taken to the deposition as it thus stands, with notice that he will be subsequently recalled for redirect examination, if complainants' counsel should so desire.)

Counsel for defendants consents to an adjournment until to-morrow morning, to enable the witness to drive home and return, but will not consent to this witness being re-examined at any future time after other witnesses have been examined.

ISRAEL BOYER.

Five and a half o'clock p. m., adjourned to meet to-morrow, May 1st, 1878, at 9 o'clock a. m.

MAY 1ST, 1878—9 o'clock a. m.

Met pursuant to adjournment, and counsel present as before.

WILLIAM Y. SINK, a witness produced on the part of the complainants, being first duly sworn, in answer to interrogatories propounded, deposes and says as follows:

Int. 1. State your name, age, occupation, and residence?

Ans. William Y. Sink; I am aged about 40 years; I am the prothonotary of York County; my residence is in York, Pa.

Int. 2. Do you know Reuben Hoffheins; and, if so, how long have you known him?

Ans. I have known him for about 19 or 20 years.

Int. 3. What was your business in 1860 and 1861, and where did you carry it on?

Ans. I was working at carpentering, in Dover, York County.

253 Int. 4. What was Mr. Hoffheins' business at that time, and where?

Ans. Mr. Hoffheins was building reapers and mowers at that time, in Dover.

Int. 5. When did you quit working at your trade in and about Dover, and where did you next go?

Ans. I quit work at Dover in 1862, about August, and then went to work at millwrighting at Small's mill, near York.

Int. 6. How do you fix the time of leaving Dover?

Ans. One thing that I can tell by is, I know that it was the year before the rebels were here, the year before the battle of Gettysburg.

Int. 7. Do you remember of seeing in Mr. Hoffheins' shop a new self-raking reaping machine which he claimed to have gotten up? And, if so, state when it was that you saw it completed and how you fix the time.

(Objected to.)

Ans. Well, I saw it completed in about June, 1861; I know it was the time just before I left Dover, and before I went to work at millwrighting.

Int. 8. Do you remember whether it was the same year you left Dover, or the year previously?

(Objected to.)

Ans. It was the year previous.

Int. 9. Do you remember whether it was before harvest or not?

(Objected to.)

Ans. It was before harvest.

Int. 10. Did you see the machine tried; and, if so, on what farm and in what kind of grain?

Ans. I saw the machine tried on Mr. Lenhart's farm, in green rye.

Int. 11. How long did the trial last, or how much work was done at that trial in the green rye?

Ans. The trial did not last long at that time, only two or three small rounds.

254 Int. 12. How did the machine work during that trial?

Ans. Well, it worked all right until the rake broke.

Int. 13. What was done with the machine then?

Ans. They took it back to the shop.

Int. 14. How many driving-wheels did that machine have then?

(Objected to.)

Ans. Two.

Int. 15. What kind of a main frame, wood or iron?

(Defendants' counsel objects to the witness being led in this manner. Complainants' counsel does not understand that a line of examination which calls for a description of a machine, part by part, is leading or objectionable in any legal sense.

Defendants' counsel suggests that the witness be allowed to describe the machine as he remembers it, and not be specially interrogated as to whether or not it contained this or that feature, and it is to that manner of leading the witness that he objects.

Complainants' counsel replies that he has not as yet asked such a question as that suggested in the last memorandum.)

Ans. Wood.

Int. 16. How was the tongue connected with the main frame?

(Same objection.)

Ans. Well, it was—the tongue was connected like at all machines, I guess.

Int. 17. Was it a stiff tongue or a jointed tongue?

(Same objection.)

Ans. It was a stiff tongue.

Int. 18. Where did the grain fall when it was cut?

(Same objection.)

Ans. On the platform.

Int. 19. Was there anything to rake it off of the platform; and, if so, what was it?

(Same objection.)

Ans. A rake.

255 Int. 20. What kind of a motion did the rake have?

(Same objection.)

Ans. Well, I don't know what you would call it; a revolving motion.

Int. 21. Where, with reference to the machine, or main frame, did the rake deposit the grain?

(Same objection.)

Ans. Right back of the main frame.

Int. 22. Was there more than one rake; and, if so, how many?

(Same objection.)

Ans. I couldn't tell positively whether there was one rake and three paddles, or two rakes and two paddles.

Int. 23. How were the rakes and paddles supported?

(Same objection.)

Ans. By a main post that stood on a platform.

Int. 24. What platform did the main post stand on?

(Same objection.)

Ans. On the platform that the grain fell on.

Int. 24½. What part of the platform did it stand on?

(Same objection.)

Ans. On the inside corner.

Int. 25. How was the grain platform connected with the machine?

(Same objection.)

Ans. It hung to a hinge cutter-bar.

Int. 26. Before you saw this machine completed had you seen Mr. Hoffheins, or his men, working on it, or had you seen parts of it in the shop; and, if so, what parts?

Ans. I did; I saw parts of it off and on as they were working at it, the posts and the castings.

Int. 27. When did you first see any of these parts in the shop?

Ans. It was about August, 1861, (the witness corrects himself by saying "it was in 1860.")

Int. 28. From the time you first saw any of these parts, say about August, 1860, as stated in your last answer, up to the time

256 when you saw the machine completed, were you at the shop; and, if so, about how often, as near as you can remember?

(Objected to.)

Ans. Well, I don't think there was a week that I was not there about once or so.

X-int. 29. What is your recollection about seeing parts of this machine during those occasional visits to the shop?

Ans. I can't specify any particular part of it; I know I saw it on the way as they worked at it from time to time.

X-int. 30. Do you remember whether that machine had a seat for the driver; and, if so, what part of the machine was it on?

(Objected to as leading.)

Ans. It was on the front part of the machine; at the same time the seat could be changed.

X-int. 31. Look at the model now shown you, marked Complainants' Exhibit, No. 61, and state how it compares in the respects as to which you have testified with the machine you saw tried in the "green rye."

Ans. Well, this compares with it exactly; I can't see no difference;

I see this here, this shows (witness points to the brass post on the middle of the frame) that the seat can be changed.

Cross-examined by J. R. BENNETT, counsel for defendants:

X-int. 32. On what occasion was it that you first saw the full-sized machine?

Ans. Well, the first time that I could say positively was when they tried it in the green rye.

X-int. 33. How long were you present at that time?

Ans. I was present through the whole trial.

X-int. 34. How long did the trial last?

Ans. I can't tell; I didn't time it; I know it didn't last long.

X-int. 35. Was it a half hour?

Ans. Well, I guess it was; perhaps more.

X-int. 36. How much more?

Ans. I couldn't tell.

X-int. 37. Was it an hour?

257 Ans. I don't know, I told you.

X-int. 38. You have said that it was "more than a half hour, perhaps;" now, do you think it was an hour altogether?

Ans. Can't tell whether it was or not.

X-int. 39. How much did they cut at that time?

Ans. Well, as near as I can tell, two or three small rounds.

X-int. 40. About how small were the rounds?

Ans. They might have been a couple hundred yards around.

X-int. 41. Do you mean that they cut about two hundred yards in all?

Ans. I mean "around" was a couple hundred yards, perhaps.

X-int. 42. How many yards in all did they cut?

Ans. Perhaps four or five hundred.

X-int. 43. Why was it they did not cut more at that time?

Ans. Why, I can show you why that was. (Witness points to the model, and putting his finger on one of the shafts that connects the rake-arms on top of the rake-head, and says:) That the shaft wasn't strong enough for the green rye; the green rye was heavy.

X-int. 44. Was that the only thing that broke?

Ans. That was all, to my recollection.

X-int. 45. Who was present at that trial?

Ans. I couldn't tell you positively who was present; positively it was that long; I know that I was there; I know that Mr. Hoffheins was present and Mr. Lenhart.

X-int. 46. Can't you remember any one else who was present at that trial?

Ans. I know some of the shop hands were present, but I couldn't tell which ones they were any more.

X-int. 47. Give the names of any and all parties besides those that you have mentioned, that were present during that trial.

(Objected to, for the reason that the witness has already stated his full knowledge on that point, or at least so expressed himself.)

Ans. Well, I have no names to give.

258 X-int. 48. Do you remember the names of no parties present, save those already mentioned?

Ans. I couldn't positively; I know that there were others there; I know that some of the shop hands were there; perhaps all, but which of them I couldn't tell you now.

X-int. 49. Were there any others there besides yourself, Mr. Hoffheins, Lenhart, and the shop hands?

Ans. I don't recollect.

X-int. 50. How was it that you happened to be present at that time?

Ans. Why, I just happened to come down through Dover, and when they came out of the yard with the reaper and said that they were going to try it in the green rye, and I went along to see it.

X-int. 51. You remember that distinctly, do you?

Ans. Yes, sir.

X-int. 52. Who was it that made that remark?

Ans. I can't recollect who it was.

X-int. 53. Where were you coming from?

Ans. From home.

X-int. 54. What time in the day was it?

Ans. To the best of my recollection, it was in the evening.

X-int. 55. And you went along out and saw them try the machine?

Ans. Yes, sir.

X-int. 56. About what time in the evening?

Ans. Well, it was after 5 o'clock, as near as I can recollect it; it might have been later; it might have been after 6 o'clock.

X-int. 57. Had you had your supper?

Ans. Yes, sir.

X-int. 58. What time did you usually take your supper?

Ans. Well, I think we used to get our supper between—well, we used to get our supper between 4 and 5 o'clock.

X-int. 59. What had you been doing that day?

Ans. I can't tell you where I had been working that day, but it was after I had quit work.

259 X-int. 60. Have you no recollection as to where you had been working that day?

Ans. I know where I was working about that time, but I can't say positively whether I worked there that day or not.

X-int. 61. Was you working by the day at that time?

Ans. No, I was not.

X-int. 62. What time did you usually stop work for the day?

Ans. On Saturdays we used to stop at 4 o'clock. This was on a Saturday.

X-int. 63. What day of the month was it?

Ans. I can't tell.

X-int. 64. How do you know this was on a Saturday?

Ans. I know I had just come home; I had been working out of town.

X-int. 65. How does that enable you to say that it was on a Saturday?

Ans. Why, because I just came home and I changed clothes, and then went down town; I didn't go home through the week.

X-int. 66. Where was it that you were working at that time?

Ans. I was working at Mr. Boyer's house about that time, but I can't say positively that I worked there that day.

X-int. 67. How, then, can you possibly say that it was on a Saturday that you witnessed the trial?

Ans. Because I am positive in my mind that it was on Saturday.

X-int. 68. And yet you cannot say what day of the month it was?

Ans. No, I cannot.

X-int. 69. Did you ever go down into Dover any other than Saturday night?

Ans. Not unless I was working in Dover, or didn't do anything.

X-int. 70. Then might it not have been some other evening that you went down to Dover?

Ans. No, I am positive that it was on Saturday. I know that it was after they had stopped work at the shop.

260 X-int. 71. Do you mean stopped work for the day?

Ans. Yes, sir. But that is no reason why I know it; I know it to be so.

X-int. 72. You know it to be so, because you know it. Is that your only reason?

Ans. No, that is not my only reason.

X-int. 73. Well, give your reason.

(Objected to, for the reason that the witness has already stated facts which constitute the reason of his knowledge, and his answers to like questions were not objected to.)

Ans. Well, they used to stop on Saturday evenings; they did not work the ten hours; on Saturday evenings I think they used to stop at 5 o'clock. The hands were all anxious to see this and so they made it at that time so that they would not lose so much time.

X-int. 74. How do you know that they "made it at that time"?

Ans. Because I heard them say so.

X-int. 75. Who did you hear say so?

Ans. That I can't tell.

X-int. 76. When did you hear any one say that?

Ans. At the time.

X-int. 77. What occasion was there for any one telling you that?

Ans. No occasion at all.

X-int. 78. Did some one stop you on the street and tell you?

(Further inquiries of this character objected to, for the reason that such questions and answers noted on the record relate to matters wholly immaterial, irrelevant, and frivolous as regards any question at issue in the cause, or any fact proven in the case.)

Ans. I can't recollect where they told me. I know it to be the case.

X-int. 79. For whom were you working?

Ans. For my brother.

X-int. 80. On what particular job were you engaged at the time you say this trial took place?

261 (Objected to, as a question already answered, as well as for reasons just previously noted.)

Ans. I have told you already.

X-int. 81. Well, just state it again.

Ans. I have no more to say; I told you all I know about it.

X-int. 82. I wish you to state on what particular job you were engaged the day and week prior to your attending the trial?

Ans. If you refer back, why you can see it all; so I won't answer it again, for there is no use in it.

(Complainants' counsel suggests on the record that he very much prefers and requests that the witness should answer the questions as often as the defendants' counsel wishes to ask it. At the same time protests againsts the repetition of such questions, for reasons already noted; and also, because many of such questions as have been asked, are clearly asked for the purpose of exhausting the patience of the witness, and not for the purpose of ascertaining any fact material to the case.

Defendants' counsel denies the charge above made, but as the witness is in the midst of cross-examination does not think it advisable to state his reasons on the record at present.

The attention of the witness is called by complainants' counsel to cross-interrogation 66, and his answer thereto, and if the contents of that answer are correct, he is requested to state it again.

Defendants' counsel objects to this manner of calling the witness's attention to his examination, and insists that the witness shall answer the question from memory entirely, irrespective from what the record may show.)

Ans. To the best of my knowledge, I was working at that time on Mr. Solomon Boyer's house, but at the same time I can't recollect that I did work there on that day or week, but I know I worked somewheres, and that I had just come home on Saturday evening.

(Counsel for complainants requests a note to be made here that the foregoing answer was given as requested by respondents' counsel without any examination, by witness, of any part of his previous testimony.)

262 X-int. 83. What were you doing at Mr. Solomon Boyer's? I mean what particular kind of work were you engaged upon there?

Ans. Carpenter work; building a house.

X-int. 84. When you stopped work there, was his house completed?

Ans. No, sir.

X-int. 85. Just state in what condition towards completion was his house at the time you stopped working there?

Ans. It was under roof; I don't remember whether the doors and windows were in; I know I didn't help finish it.

X-int. 86. How far was it from your house to Mr. Hoffheins' shop?

Ans. About a square.

X-int. 87. How far from his shop to the field was it where the trial took place?

Ans. Well, it was between a quarter and a half mile, to the best of my recollection.

X-int. 88. How did they take the machine out there?

Ans. They took it out with horses, of course.

X-int. 89. Did you help them to take it out?

Ans. No, sir.

X-int. 90. Was the machine all fixed ready for reaping when it left the shop?

Ans. I don't know.

X-int. 91. Did they take the machine out to the field in pieces?

Ans. I don't know whether they did or not.

X-int. 92. Did they draw the machine itself out on the road with the horses, or was it loaded on a wagon?

Ans. I don't remember how they took it out any more.

X-int. 93. Did you stay in the field until the trial was over?

Ans. Yes, sir.

X-int. 94. Did they take the machine back that night?

Ans. Yes, sir.

X-int. 95. Well, how did they take it back?

Ans. As they took it out, I guess.

263 X-int. 96. You are willing to swear positively that they took that machine back to the shop that night?

Ans. To the best of my knowledge, they did; I would not say positively.

X-int. 97. Do you remember going back with the machine?

Ans. I did not stay to see them go back with it, but to the best of my knowledge they took it back.

X-int. 98. You say to the "best of your knowledge;" of what, in reference to that matter, does your knowledge consist of?

Ans. I don't consider that a fair question.

X-int. 98½. Question repeated.

Ans. Well, I know that they didn't leave it out there, or else it would be there yet.

X-int. 99. How do you know that they didn't leave it out there?

Ans. I didn't stay there to see whether they took it back, but I know that they were making ready to take it back.

X-int. 100. In answer to interrogatory "98½," you say "or else it would be there yet." How do you know it isn't there?

Ans. Why, if it would be, I would have seen it afterwards, I guess.

X-int. 101. When did you last see this machine, or any parts of the same?

Ans. I don't recollect.

X-int. 102. During the past month or two, have you seen this same machine, or any parts of the same?

Ans. I have not.

X-int. 103. Do you know where it is, or have you heard from anybody as to its whereabouts?

Ans. No, sir; I have not.

X-int. 104. When did you last see this machine, and where?

Ans. I have no recollection; don't recollect.

X-int. 105. Have you seen it within the last three years?

Ans. Not that I know of.

X-int. 106. Has Mr. Hoffheins, or any one connected with him,
264 shown you a machine within the last three years that they represented to you was that same machine, or part of the same?

Ans. Not to my recollection.

X-int. 107. How was that machine driven in the field?

(Objected to as indefinite.)

Ans. I didn't pay no attention to the driving.

X-int. 108. Don't you know how it was hauled through the field?

Ans. I think it was hauled with horses; I know there were no elephants.

X-int. 109. Then you have no distinct recollection as to how the machine was drawn during the trial?

Ans. No more than I know there were horses attached to it.

X-int. 110. How many horses?

Ans. I can't tell you, whether two or four, how many; I know there were not less than two.

X-int. 111. How were the horses driven?

Ans. Don't remember.

X-int. 112. Did you make a close examination of the machine at that time?

Ans. I did not.

X-int. 113. Can you correctly describe that machine, in all parts, as it was at the time of the trial, relying entirely on your memory?

Ans. I could not without the model.

X-int. 114. How long before you moved from Dover was it that this trial took place?

Ans. It was a year about, to the best of my knowledge.

X-int. 115. What enables you to say that it was "about a year before that time?"

Ans. Why, I know it was a year before the rebels were here.

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X-int. 115. What enables you to say that it was "about a year before that time?"

Ans. Why, I know it was a year before the rebels were here.

X-int. 116. How does that enable you to connect it with the time when you saw this machine?

Ans. Didn't you ask me the time I left Dover?

X-int. 117. Question repeated.

265 (Complainants' counsel requests the commissioner to read to the witness cross-question 114, and all the following, and the answer, as the last answer of the witness apparently indicates that he has misunderstood some of the questions, as to date.

Defendants' counsel protests to being interrupted in this manner during the cross-examination of the witness.)

Witness says:

Didn't you ask me when I left Dover, and I told you in 1862?

(Defendants' counsel wishes the witness to answer the question as he understands it.)

Ans. I don't understand the question at all.

X-int. 118. Were you in the habit of visiting Mr. Hoffheins' shop, from time to time, until you moved from Dover?

Ans. Well, yes; but not so much any more after the trial of that rake.

X-int. 119. How many times?

Ans. I can't tell you; have no recollection how many times.

X-int. 120. Once a week?

Ans. I couldn't tell.

X-int. 121. You haven't a very distinct recollection of what happened at that time, have you?

Ans. I have a distinct recollection of what was going on before that trial, because I was anxious to see whether that rake would work or not.

X-int. 122. Work in what way?

Ans. Well, whether it would be—turn out to be a success or not.

X-int. 123. In what way a success?

Ans. I don't know that I can tell you any plainer.

X-int. 124. What did you understand that he was trying to do?

Ans. Well, I guess it was the whole machine together, but the only thing that I paid attention to was the rake; at the same time I know the whole machine that he built that year, but it was the rake part that made me pay as much attention to it as I did.

266 X-int. 125. Why was it that you paid the most attention to the rake part?

Ans. Because I never saw it tried before; I didn't know how it would work.

X-int. 126. Work in what way?

Ans. Well, I can't tell you in what way, if you can't understand it.

12.15 p. m., adjourned until 1.30 p. m.

1.30 p. m., met pursuant to adjournment, and counsel present as before.

X-int. 127. You say in answer to X-int. 125, "I didn't know how it would work." Do you mean by that that you didn't know whether the rake, as he had it arranged, would reel and sweep the grain onto the platform and rake it off the same?

Ans. Yes, that was what I meant—whether it would answer all the purposes.

X-int. 128. What purposes?

Ans. The purposes that you mentioned.

X-int. 129. How were the horses driven during that trial?

Ans. Perhaps Mr. Shireman can tell you; that question was asked before; all that I can tell is that they were driven as horses generally are driven.

X-int. 130. What do you mean by "as horses generally are driven?"

(Complainants' counsel renews the objection noted after X-int. 82, and also states that he considers the same objection good as to the larger part of the cross-examination, and continues it in force as to all future questions of like character; but to save time, space, and expense, does not wish to enter it on record after each of such questions.)

Ans. Well, they were driven by a proper person and not by a jackass, as the one who asked the question.

267 (Defendants' counsel objects to the answer as not responsive, and, so far as the language employed by the witness in answering the question, beneath his notice, and such a remark as a gentleman would not be guilty of making, and leaves the court to draw its own conclusion, from the language therein used, as to the character of the witness.

Counsel for defendants is reminded that the answer was given under strong provocation, and that it was recorded as given at his own particular request.

Defendants' counsel denies the statement set forth, and states that that was the answer given by the witness to a question in the usual manner.

And complainants' counsel adds that the moment the answer was out of witness' mouth defendants' counsel promptly said, "Put it down."

Defendants' counsel states that the answer was taken by the examiner in the same manner as all other answers have been taken during this examination.

Complainants' counsel only desires to add his regret that the witness, under the excitement of the moment, should have introduced any personalities into his answer, and would ask the witness to answer every question as well as he can, no matter how absurd it may be.)

X-int. 131. Did the driver walk upon the ground while driving the horses?

Ans. I don't know whether he did or not.

X-int. 132. Did he ride on the horse?

Ans. I don't know.

X-int. 144. Did he ride on the machine?

Ans. I don't know.

X-int. 134. Don't you think that if he had rode on the machine while driving the horses that you would have remembered it?

Ans. It is not likely that I would have remembered it 18 or 19 years back; things that I paid no attention to. And, as to the driv-

268 ing, I paid no attention to it; it didn't make no difference to me how that was done.

X-int. 135. Do you know whether that machine, during the trial, had a seat on or not?

Ans. It had a seat on.

(Model No. 61 is put out of sight by defendants's counsel.

In reference to removing the model, defendants' counsel states that he wishes now to cross-examine the witness in reference to that old machine, as he remembers the same, without any reference to the model whatever.

If this is deemed important, complainants' counsel desires the fact

to be recorded here that the witness was examined in chief while the model was in another room, except as to the last direct question.)

X-int. 136. When did you first see the model "Complainants' Exhibit No. 61"?

Ans. I saw it yesterday.

X-int. 137. Where?

Ans. In here.

X-int. 138. Who was present at the time you first saw that model?

Ans. Mr. Hoffheins, Mr. Christy, Mr. Bennett, Mr. Shireman, and Adam R. Reese; I think Mr. Harding was here.

X-int. 139. You were present during part of the examination here yesterday, was you not; and did you not then see the model referred to?

Ans. I saw it then; I was called on to be a witness here, and came down, and you were not ready then, and I went home again. That was the first time that I saw that model.

X-int. 140. When next did you see that model?

Ans. I saw it this morning when you brought it out. That was the first I saw of it, this morning when it was brought out here.

X-int. 140. Who was present?

Ans. When I saw it the first time this morning all the parties here were present, as far as I recollect.

269 X-int. 141. Had you not examined that model prior to commencing your testimony in this case?

Ans. Not more than what I looked at yesterday.

X-int. 142. Had you had any other models shown you besides the one referred to?

Ans. I saw other models here, off and on.

X-int. 143. When?

Ans. I can't tell you when; for the last four or five years I saw a model standing aroud here.

X-int. 144. Have you been shown any model by Mr. Hoffheins, or seen any around here, in connection with this case, or having any bearing upon this alleged invention of Mr. Hoffheins, during the past few weeks, other than model "No. 61"?

(Objected to for indefiniteness, as it might be some trouble even for an accomplished expert to tell what models are or are not included in the question.)

Ans. I have not.

X-int. 145. Have you talked with any one recently in reference to the subject-matter of Mr. Hoffheins' alleged invention?

Ans. I have not.

X-int. 146. Did you not testify as a witness on behalf of Mr. Hoffheins in reference to his invention some time during the year 1877?

Ans. I did; but not in this case, I think.

X-int. 147. Was it not in reference to the same machine?

Ans. It was the same machine.

X-int. 148. Did you not on that occasion identify a model as being a correct representation of that machine?

(Counsel for complainants suggests that as the respondents' counsel has a copy of the testimony referred to, it would be only fair on his part to submit it to the witness and let him see in what manner and to what extent he did identify any other model.

Defendants' counsel now reads to the witness from his former examination that question and answer which relate to what is called for in the question.

270 Previous question and answer being read to the witness, complainants' counsel requests him to put it on the record.

Defendants' counsel replies, that having read the question and answer to the witness, he thinks that is sufficient.)

Ans. I did, all except the difference in the frame.

X-int. 149. Are you willing to swear that complainants' model No. 61 is a correct duplicate of the model which you identified on your former examination, with the exception of the frame?

(Objected to, in so far as it may involve any question of identity of parts as to which the witness has not testified; and also as a somewhat unfair effort to get the witness to testify in reference to the details of a complicated model as to which he was examined some time in 1877, and which he does not appear to have seen since that time.

Defendants' counsel replies, that it nowhere appears on the record that the witness has not seen that particular model since that time; further, that the witness has been called to testify in reference to a machine that he saw about 18 years ago, and said machine being equally as complicated as the model referred to, and that if the witness can remember as to the machine he then saw, certainly he ought to have a much clearer recollection of that which he saw not a year ago.

To which complainants' counsel replies, that in the present examination the witness has not been interrogated as to all the details of construction of either the machine or the model, but only to such parts of them as are proper for the purpose of identifying the machine.)

Ans. I wouldn't say positively, unless I would see it again; there may be something changed; but if it is, it is on the same plan.

X-int. 150. What do you mean by "on the same plan"?

Ans. Well, I can't recollect any more whether the rake was driven from the inside or outside of the frame of that model.

X-int. 151. Are you willing to swear positively that with the
271 exceptions already noted, Complainants' Exhibit No. 61 is a correct and exact duplicate of the model you identified on your former examination?

(Same objection.)

Ans. No; to the best of my knowledge I could swear; but positively, I could not. I would not swear to anything positive where there was any uncertainty to it.

X-int. 152. Had that model a seat on it?

Ans. Yes, sir.

X-int. 153. Where was the seat located?

Ans. The seat was located in —, well, I don't know that I would say without looking at it; I have forgot.

X-int. 154. After seeing that machine at the trial, when next did you see it?

Ans. I don't know when next I saw it.

X-int. 155. Do you know what became of that machine?

Ans. I do not.

X-int. 156. Did you never see it in and around the shop again?

Ans. No, I couldn't say positively; it is quite likely I did, but I have no recollection of it.

X-int. 157. Are you positive that the first time you saw that machine was the time that they took it to the field?

Ans. That is the first time that I could positively say that I saw it completed.

X-int. 158. When did you see any part or parts of it, prior to that time?

Ans. I saw parts of it, I guess ten months before that.

X-int. 159. State the precise time that you saw any parts of that machine?

Ans. I could not state positively the precise time, but I don't think it was later than August, 1860.

X-int. 159½. How do you know that it was not later?

Ans. I know that it was right after harvest that I saw this started.

X-int. 160. How do you know that it was not right after the harvest of 1859?

272 Ans. I was not in Dover at that time.

X-int. 161. What enables you to fix the time as August, 1860, that you saw the parts of that machine?

Ans. I know that it was the first year that I lived in Dover.

X-int. 162. How does that enable you to connect it with the time of seeing those parts?

Ans. Don't you know the time when you commenced to practice law?

X-int. 163. Question repeated.

Ans. Well, I told you before how I knew it was that year.

X-int. 164. Can you give no other reason?

A. I know it was the year when the war broke out. Now, if you know what year that was.

X-int. 165. What connection had that event with your seeing certain parts of that machine, so as to enable you to say that it was in that same year?

Ans. What connection should any other event have?

X-int. 166. Are you positive that it was not more than ten months from the time you first saw parts of that machine, until you witnessed the trial in the green rye?

Ans. It might have been a little longer, and it might have been not so long; I couldn't say positively.

X-int. 167. What parts of this machine did you see?

Ans. The first parts that I saw were the posts, the main posts of the rake; that was the first part that drew my attention.

X-int. 168. How do you know that that was a part of the machine you saw tried in the green rye?

Ans. Because I saw the rake attached to it afterward.

X-int. 169. How do you know that it was that same post?

Ans. I couldn't say that it was that same post; if it wasn't that same post it was one just like it.

X-int. 170. What was the size of that post?

Ans. Can't tell; I never measured it.

X-int. 171. Don't you know how high it was?

Ans. Well, I can judge about high how it was.

273 X-int. 172. Are you willing to swear positively that that post you saw at that time was the same post that was in the machine tried in the green rye?

Ans. As I said before, if it wasn't the same one it was one just like it.

X-int. 173. At that time was not Mr. Hoffheins engaged in making different implements or machines?

Ans. Well, I think he was; I can't say positively that he wasn't.

X-int. 174. Now, what reason have you for saying that you saw parts of that machine in August, 1860?

Ans. For this reason: I know I came in the shop right after harvest, and I saw this rake started. The first thing I saw was that post, then

I wanted to know what it was for, and then I was shown other parts of the rake.

X-int. 175. Who did you ask what it was for?

Ans. Why, I can't tell you who was working at it.

(Answer objected to as not responsive.)

X-int. 176. Question repeated.

Ans. The party that was working at it.

X-int. 177. Will you swear positively that you asked the party that was working at it what it was for?

Ans. Well, I wouldn't swear positively, but I did ask some person that was working about the shop what that part was for.

X-int. 178. Well, what did they say in reply to your question?

Ans. They told me then what it was for, and showed me.

X-int. 179. State just what they told you that it was for.

Ans. I couldn't tell what they said.

X-int. 180. And you have no recollection whom you asked?

Ans. No.

X-int. 181. After seeing that post, what other part did you see, and when?

Ans. I saw the castings; I don't know when after that.

X-int. 182. How long after that?

Ans. Well, I can't tell how long after.

X-int. 183. How did you know that those castings were for the machine that you saw tried in the green rye?

274 Ans. I did not know that they were for that machine; I knew that they were for the rake; I didn't know on what machine they were going to put that rake.

X-int. 184. Do you know, and are you willing to swear, that those castings which you saw, were put on that machine that was tried in the green rye?

Ans. I do not know whether they were the same castings that I saw long before, but if they wasn't, they were some just like them—same castings.

X-int. 185. For what purpose was that casting to be used?

Ans. To drive the rake.

X-int. 186. Please describe the casting.

Ans. If you will get the model I will show it to you.

X-int. 187. Describe that casting as you now remember it, irrespective of a model?

Ans. The casting that sets on top of the post?

X-int. 188. I wish you to describe that casting as you now remember it, irrespective of its position?

Ans. Well, I am no machinist or no architect; I can't give you any plan of it.

X-int. 189. Did you see any other separate parts of that machine, besides that already mentioned?

Ans. Of what machines do you mean, the rake or the machine?

X-int. 190. I mean the machine as a whole; as it was tried in the green rye.

Ans. Well, I can't tell about the other parts of the machine; I know that he had started to have, I don't know how many at that time; he didn't put the rake on all of them, I don't think.

X-int. 191; Do you know on how many he did put the rake on?

Ans. No, I don't.

X-int. 192. How many did you see around his place with rakes on?

Ans. I don't recollect of more than this one that I saw, but I think

he put it on others at the same time—I mean the same season; I don't know whether it was exactly the same time.

275 X-int. 193. At the time this machine was built did you understand that it was to be a combined machine—that is, a reaper as well as a mower?

Ans. Yes, sir.

X-int. 194. Did you ever see that machine used as a mower?

Ans. No; not to my recollection; I might have seen it; I saw the same machine used, but I can't say whether it was the identical one that was used in the green rye, I mean.

X-int. 195. Do you mean that you saw a Hoffheins combined machine arranged and worked as a mower?

Ans. Yes, sir.

X-int. 196. That same season?

Ans. Yes, sir.

X-int. 197. Where was it, and when?

Ans. I can tell you where it was, but I can't tell you exactly when it was.

X-int. 198. Where was it?

Ans. It was at Melchinger's.

X-int. 199. Who was present at the time it was used as a mower?

Ans. Mr. Hoffheins and Mr. Kunkel.

X-int. 200. You say it was a hinged finger-bar. Did the hinge work in the same manner when both used as a reaper and a mower?

Ans. Yes, sir; it did.

X-int. 201. Are you positive at the time the machine was tried in the green rye there was a seat on the machine?

Ans. Yes, sir.

X-int. 202. Where was the seat located?

Ans. I told you where it was located. Why, I told you on the front part of the machine.

X-int. 203. I wish you to give the exact location of the seat on that machine as it was when tried in the green rye.

Ans. It is a hard matter to give the exact location. I think it was right in front of one of the drive-wheels on the right-hand side of the machine.

276 X-int. 204. How far in the front of the wheel was it?

Ans. It was right on the cross-piece in front of the wheel.

X-int. 205. How many feet was it in front of the wheel?

Ans. It was no feet in front of the wheel.

X-int. 206. Do you mean that it was right over the wheel?

Ans. No; not right over the wheel, but in front of it.

X-int. 207. How many inches, as you now remember, was the top of the seat from the wheel?

Ans. It wasn't on the wheel, I know.

X-int. 208. How far was it from the wheel to the seat?

Ans. I can't tell. I know it wasn't a foot; that I know; but how many inches I would not be able to say.

X-int. 208½. Did any portion of the seat extend over the wheel?

Ans. Well, I couldn't say, positively; but I think it did a little, may be.

X-int. 209. About how much?

Ans. I am not able to say.

X-int. 210. Was not the seat placed on a piece extending out from in front of the frame?

Ans. No; the seat was placed on the frame.

X-int. 211. Will you swear positively, from your present recollection of that machine, that the seat was located on the main frame, as you have stated?

Ans. To the best of my recollection I would.

X-int. 212. What was the height of that seat?

Ans. I couldn't tell the height of that seat from the frame; I judge about 18 inches; it might have been less; it might have been more.

X-int. 213. What was the height of the wheels?

Ans. I am not able to tell.

X-int. 214. Did you ever see a man sit upon that machine and drive while reaping?

Ans. No; not to my recollection; I didn't see them reap that year, only while reaping in the green rye.

X-int. 215. Did you see a man ride at any time upon a Hoffheins combined reaper while the machine was reaping?

277 Ans. Not to my recollection; no, not while the machine was reaping.

X-int. 216. While reaping with a Hoffheins combined machine, did the driver walk upon the ground while driving, on any occasion that you saw the machine used as a reaper?

Ans. No, not to my recollection.

X-int. 217. Did the driver ride upon the horse while reaping?

Ans. I don't recollect.

X-int. 218. When this machine was used as a mower, was there a seat upon the machine?

(All questions asked and answers given heretofore and hereafter, relative to any use of the Hoffheins machine, is objected to as not proper cross-examination.)

Ans. Yes, sir.

X-int. 219. Did the driver ride upon the machine?

Ans. I saw the driver ride on the machine—yes.

X-int. 220. Where was the seat located on that machine when used as a mower?

Ans. I don't recollect whether it was in front of the wheels, or whether it was set back to that other place.

X-int. 221. Do you mean directly back of the axle, on the main frame of the machine?

Ans. Yes; I think that was the place, but I don't know on which of the two the seat was located at the time.

X-int. 222. How do you know that the seat was to be placed back on the main frame of the machine, where you have stated?

Ans. Because I saw it changed sometimes.

X-int. 223. And did the driver sit upon the seat so located, while the machine was mowing?

Ans. I don't say "so located." I saw the driver sit on the seat, but I don't remember where it was located.

X-int. 224. Why did they change the position of the seat when the machine was being used as a mower from what it was when being used as a reaper?

278 Ans. I don't know why it was, unless it was to balance the machine different.

X-int. 225. Did you ever see a Hoffheins combined machine changed from a reaper to a mower?

Ans. I did.

X-int. 226. Did they always change the location of the seat?

Ans. That I can't tell you; I don't recollect.

X-int. 227. Did Mr. Hoffheins ever say to you why it was that the location of the seat was to be changed from mowing to reaping?

Ans. Not to my recollection; if he did, I have forgotten it.

X-int. 228. In that machine which was tried in the green rye, could the driver have sat upon the seat, if located on the main frame, directly back of the axle (as you have stated), without being struck by the rake?

Ans. Well, I—that is a question that I can't answer; I can't say that he could, or I can't say that he could not; I never seen it tried.

X-int. 229. How was the rake driven in that machine?

(Model at this point was placed on the table in view of witness by defendants' counsel.)

Ans. Well, it was driven just like that there one (witness points at the model, Exhibit No. 61) drives.

X-int. 230. Without referring to the model, describe exactly how the rake was driven in that machine?

Ans. Well, I don't know that I can describe how the rake was driven.

X-int. 231. Was it driven by a shaft or by a chain?

Ans. I could tell you if I would know the names of all the pieces.

X-int. 232. Please examine model, Complainants' Exhibit No. 61, and state whether or not the rake was driven in precisely the same manner—that is, by a shaft and connection as shown in the model?

Ans. Yes, sir; it was driven exactly the same way, by a sliding shaft, or whatever you call it.

279 X-int. 233. After a period of 17 years will you swear positively that the rake was driven by precisely the same arrangement as shown in model No. 61?

Ans. Well, if there is any changes, why I can't see it.

X-int. 234. Does this small brass pin in the centre of the main frame of model No. 61, and which I now mark "A," show the exact location of the seat when changed from a reaper to a mower?

Ans. I don't know for what they were used, whether for reaping purposes or mowing purposes. That represents the one location for the seat.

X-int. 235. Does the seat on this model correctly represent the seat that was on the old machine, tried in the green rye?

Ans. Yes; the support was a regular "S."

X-int. 236. Then when the seat was located back on the pin, at the place marked "A" in the model, the driver would sit vertically or a little back of the vertical line over the pin?

Ans. Yes.

X-int. 237. Do you know how the platform was supported, that is, connected to the main frame of the machine?

Ans. Well, just like that one (pointing to the model) is, exactly.

X-int. 238. Is the link that connects the hook, to which the chain supporting the main platform is attached, in the same position relatively to the two ends of the cross-piece as it was in the machine tried in the green rye?

Ans. Yes; as near as I can recollect.

X-int. 239. I observe, on examining the model, a hole a short distance to the left of the hook above referred to. If the hook was fastened at that point, would it not be in the same proportion to the two ends of the cross-piece as it was in the old machine?

Ans. I don't know that it would.

X-int. 240. How do you know it wouldn't?

Ans. Well, I don't know positively; but the way that part is it was in the same position that the post was in the old machine.

280 X-int. 241. Did you ever examine that old machine closely in that respect?

Ans. No; I did not. But I know that it had this here piece (witness points to an arm that projects out from the rake-post at the rear of the main frame, and to which the suspension chain is attached).

X-int. 242. Then you do not know the exact position of that hook on the old machine, relatively to the ends of the cross-piece to which it was attached?

Ans. No; but I know that it answered the same purpose as this.

X-int. 243. Is the rake-post in this model in the same relative proportion as to its height as it was in the machine tried in the green rye field?

Ans. As near as I can see; I don't see that it could be better proportioned.

X-int. 244. Then it is a mere guess and a matter of sight; that is, as it appears to you?

Ans. Yes, it is; I couldn't give the exact proportion of it; but if there is any difference you can't tell the difference by looking at it.

X-int. 245. Before giving your testimony here to-day, did you read over your deposition given in behalf of Mr. Hoffheins, in June, 1877?

Ans. I did look over it a little, but I paid very little attention to it.

X-int. 246. Who gave it to you to read over?

Ans. I don't know that anybody gave it to me; I saw it lying on the table; don't recollect whether any one gave it to me.

X-int. 247. Did any one request you to read it over?

Ans. I don't know that they did or not.

X-int. 247½. Who was present when you read it over?

Ans. Mr. Christy was present. I don't know whether Mr. Hoffheins was present or not; I don't recollect.

X-int. 248. When was it that you read it?

Ans. Yesterday.

281 X-int. 249. Can't you remember whether Mr. Hoffheins was present or not?

Ans. Mr. Hoffheins was in the room, but I don't remember whether it has before or after; he might have been in at the same time.

X-int. 250. Did you talk with anybody in reference to that deposition?

Ans. No.

X-int. 251. I understand you that you merely read it over, but had no conversation with any one in reference to its contents, or anything relating to the same. Is that so?

Ans. Yes, sir.

X-int. 252. Please state how it was that you came to read that former deposition of yours.

Ans. Well, I happened to get in the room, and then these depositions were lying on the table. When Mr. Christy asked Mr. Hoffheins, "What depositions those were," and he said, "It was in the Chicago case," and he said that it was a year ago, or thereabouts, that I had given that testimony. Well, then I looked at it; that was all of it.

Cross-examination of the witness closed.

Adjourned until to-morrow morning at 9 o'clock.

And now ("to-morrow morning"), to wit, May 2, 1878, at 9 o'clock, met pursuant to adjournment. Counsel present as before.

The witness desires to correct some statements made in his testimony, which he does as follows:

I stated yesterday that I went to Dover in 1860 to live there, and I find it a mistake. It was in 1861—in April, 1861. I also stated that Mr. Boyer's house was built in 1861, which is a mistake also. It was built in 1862—the year after the trial of this machine.

282 Under the foregoing statement, Mr. Christy asks the following questions:

Int. 253. State what house you were working on, if you remember, in 1861, at the time of the trial of the machine in the green rye.

(Objected to.)

Ans. I can't say positively whether I worked at any house at the time; if I did, it was at Mr. Melchinger's.

Int. 254. Do you still remember of seeing some parts of the Hoffheins machine, at his shop, after the harvest of 1860; and, if so, do you remember how you happened to be there at that time?

(Objected to.)

Ans. I was there, off and on, during that year; I am satisfied that I saw parts of the machine right after harvest in 1860, about ten months before the trial of this machine.

(Before redirect examination, the witness is submitted for further cross-examination, if defendants' counsel so desires.)

(Defendants' counsel now proceeds to cross-examine the witness on matters brought out by the redirect examination.)

X-int. 255. When was it you discovered these mistakes?

Ans. Last night.

X-int. 256. How did you discover them?

Ans. I commenced to think over what time I had left Dover. I was positive that I left Dover in 1862—about August, 1862—at the same time I left Boyer's house; I left Boyer's house and went to work at Small's mill—Spring Garden mill—so I knew Boyer's house was not built in 1861. It was built in 1862, and I am positive that the trial of this machine was a year before, and that convinces me that I did not live in Dover in 1860, because I wasn't there more than a year and a half that I lived there.

(All the above answer commencing with the sentence "I was positive," is objected to by defendants' counsel as a volunteer statement on the part of the witness.)

X-int. 256½. Have you read, or had read to you, your examination of yesterday?

283 Ans. I looked over it myself, of my own accord, this morning a little.

X-int. 257. Have you conversed with anybody in reference to this matter, since last evening?

Ans. Not more than when I found I had made a mistake in this matter, then I told Mr. Hoffheins and Mr. Christy.

X-int. 257½. Well, what did they say?

Ans. They said I had better correct the mistakes I made, or the errors; that I would have a right to correct them.

X-int. 258. Well, did anything else take place?

Ans. That was all.

X-int. 259. At the time I left here yesterday afternoon you were still here; how long did you remain?

Ans. Perhaps five or ten minutes.

X-int. 260. What took place during that time?

Ans. I don't know that anything took place in particular.

X-int. 261. Was anything said to you during that time about your examination?

Ans. If there was, I don't know any more what it was.

X-int. 262. Did you hear anybody say that you had better look over your examination, or study over and consider as to the dates you had already given?

Ans. I was told that I had a perfect right to look over my examination, and if there was anything that I didn't understand right, contrary to my recollection, it could be corrected.

X-int. 263. When next did you see the parties above mentioned?

Ans. This morning.

X-int. 264. Then you told them that you had studied over the dates given, and found you had been mistaken, did you not?

Ans. Yes, sir.

X-int. 265. Did you see Mr. Hoffheins last evening?

Ans. I did.

X-int. 266. Did you and he talk the matter over?

Ans. No.

284 X-int. 267. State just what did take place.

Ans. I told him that I made a mistake in the year, about Boyer's house, and in the year I came to Dover also.

X-int. 268. Where did this take place?

Ans. In the house here.

X-int. 269. How did you happen to come around here last evening?

Ans. I wanted to let him know that I was wrong in the time.

X-int. 270. Did you have any conversation with him in reference to the time when Boyer's house was built?

Ans. No, sir.

X-int. 271. How long were you here last evening?

Ans. Perhaps ten minutes.

X-int. 272. Why was it you did not wait until this morning and then inform him?

Ans. I had no particular reason at all.

X-int. 273. Did any one say to you, or insinuate in any manner, that it would be well to find out and make certain as to the time when Boyer's house was built?

Ans. No, sir.

X-int. 274. Did you have any conversation last night while you were here, in reference to your examination?

Ans. We had not.

X-int. 275. Didn't Mr. Hoffheins say anything about it?

Ans. I told Mr. Hoffheins and Mr. Christy here, that I might have made mistakes, but if I did it was with a good intention.

X-int. 278. I wish to know exactly what Mr. Hoffheins said to you, while you were here last evening?

Ans. Well, he said if I am satisfied in my mind that I had made a misstatement, I could come here this morning and have it corrected, that is, if I feel like doing it; that it was immaterial to him whether I would do it or not, that I could do as I pleased. That was all that I recollect.

X-int. 279. Did he say that he knew when Boyer's house was built?

285 Ans. He did not.

X-int. 280. Did you read any part of the examination of yesterday over at that time?

Ans. No.

X-int. 281. Did you hear any of it read?

Ans. No.

X-int. 282. If you were positive last evening that you had made a mistake, why did you want to read over your examination this morning?

Ans. I didn't read over my testimony; I only looked over it to see where to find it, to refer back to it.

X-int. 283. How did you find out that Boyer's house was built in 1862 and not in 1861, as you testified yesterday?

Ans. Why, I came to think when I left Boyer's house and went to work at Small's mill in 1862, when that mill was remodeled.

X-int. 284. Did you ask any one?

Ans. I did not.

X-int. 285. Have you conversed with no one as to the time when Boyer's house was built, and as to the time when you left Dover?

Ans. I have not.

X-int. 286. Then the correction which you have made is from memory alone?

Ans. Yes, sir.

X-int. 287. Don't you think that your memory was as good yesterday as it is to-day?

Ans. Not in this matter.

X-int. 288. Why not?

Ans. Because I hadn't bothered myself about it.

X-int. 289. Is it your habit to testify under oath without properly considering that in reference to which you are testifying, and without any regard as to whether what you say is or is not so?

Ans. My testimony was as to the best of my knowledge and belief at that time; I hadn't studied ahead over this matter; I aint
286 interested enough in the case to do as much as that; perhaps if I had seen as much pay in the matter as some others do I would have studied it up better; I merely came here to testify what I know about it, and no more.

X-int. 290. Your mind being so treacherous and variable as to change from day to day, don't you think it very probable, if you were called to testify again to-morrow, you would give different dates when these things in controversy happened?

(Objected to, in so far as it contains language of a personal and offensive character, as improper and unnecessary, and also because it assumes improperly that the witness has given different dates as to any fact in controversy.

Defendants' counsel denies anything personal or offensive in the question, and so far as to what the witness has already stated, the record itself will show.)

Ans. No, I don't think I would; at the same time I am no Pope.

X-int. 291. How do you know that Boyer's house was built in 1862?

Ans. Because I am just as positive it was built in 1862 as I am that we are sitting here.

X-int. 292. Can you give no reasons?

Ans. I can.

X-int. 293. Give them.

(Objected to, because like questions have been previously asked and answered at length, and that it is a sheer waste of time, money, and patience to go over the same facts, time and time again, in a proceed-

ing of this kind, and a gross abuse of the right of cross-examination away from the court.

Defendants' counsel replies that complainants' counsel did not so consider it when he had the witness make a long statement on the record, thereby changing the date by which the witness fixed the happening of certain events, and from which the cross-examination results.

Note is made here that the "long statement" referred to was less than eight lines in length, and that it was made at the request of the witness.)

287 Ans. Because I know that I left the house before it was completed, and went to work at Small's mill, when it was remodeled, and that was in 1862.

X-int. 294. Did you not say yesterday that you left Dover in 1862, and that Boyer's house had been built the year previous to that?

Ans. I said yesterday that I left Dover in 1862; that I did not recollect when I done the last work about Dover.

(Answer objected to as not responsive.)

Question repeated.

Ans. Yes, sir, I said so; and I said it with the best of my recollection, but I found afterwards, after considering over the matter, that it was in 1862 when the house was built, the same year that I left Dover.

X-int. 295. How do you know that your present recollection is more correct than that of yesterday?

Ans. By considering more over the matter.

X-int. 296. You stated yesterday that the trial in the green rye took place a short time after you quit work at Boyer's house?

Ans. I did not; I deny the assertion. You asked me yesterday where I was working at that time when the trial took place. I told you I couldn't say positively, or something similar to that, but I had an idea that Boyer's house was under way at that time, and it was most likely that I was working there, but I had no recollection that I did work there that day, or that week, and couldn't tell positively where I did work that day or that week; this may not be the same language, but it's the same meaning.

(Defendants' counsel refers to cross-questions and answers 80, 81, 82, and 83, where it will show just what the witness did state.)

X-int. 297. Yesterday you fixed the time at which you saw some separate parts of the machine as being the year you moved to Dover. How now do you fix that time?

Ans. I fixed it to the best of my recollection, yesterday, without having any time to consider over it. I made a mistake, which I found

288 afterwards; but having been in Dover, off and on, that same year, and saw the rake under construction, off and on, led me to think that it was in that year when I first came to Dover to live, but after considering over the matter, I am satisfied in my mind that it was not in that year. It was in the year before, in 1860. At the same time, when I did make that statement, I was under the impression that I lived in Dover that same year, but after considering over the circumstances, I am satisfied that it was not in that year; it was the year after, in 1861.

X-int. 298. Where did you live before you moved to Dover, and how far was it from Dover?

Ans. Just before I moved to Dover, shortly before, I lived with Mr. Trimmer; that was about eight or nine miles from Dover, to the best of my knowledge.

X-int. 299. Did you live there in 1860?

Ans. Part of 1860; the latter part.

X-int. 299½. What part? Give the exact part of the year you lived there, and where you lived prior to that?

Ans. I can't give you the exact part. I can give it to you pretty near. I went to Mr. Trimmer's in corn-husking time; I had my home before that with Mr. Grove, the same year; that was in Dover township, about four miles from Dover, I think, as near as I can guess.

(Defendants' counsel states that he has removed the seat on Exhibit Model 61 from the point where it was when introduced, on the right-hand front corner of the frame, to the rear of the main frame, directly back of the axle; and where the witness stated he saw the seat placed, and which was marked at that time A, and with the seat so arranged on the model, proceeds to examine the witness.)

X-int. 300. In what proportion is this model, Exhibit 61, to the full-sized machine that you saw in the green rye?

Ans. I can't answer that question; I never measured the full-sized machine nor the model.

X-int. 301. Assuming the cutter-bar in that machine to have been four feet nine, and the cutter-bar in this model nine inches and a half, then what proportion is this model to that machine?

289 (Defendants' counsel is requested to state on the record his object in this line of questioning.

Defendants' counsel replies that he does not propose to advise the witness as to what he proposes to do, and that so far as counsel is concerned, he will discover the reason as the examination progresses.

Plaintiffs' counsel accordingly objects to this question, and all other questions relating to the same matter, because, 1st, such inquiries are not responsive to anything inquired in chief; 2d, the witness has not been called or examined as an expert in any matter appertaining to harvesting machines or models, and neither as a carpenter or as a county official can he be presumed to have such expert knowledge; and, 3d, because his last answer indicates that it is a matter he knows nothing about, except from sight and recollection.)

Ans. I can't tell you exactly.

X-int. 302. Assuming the cutter-bar on the old machine to have been fifty-seven inches, and the cutter-bar in this model nine and a half inches, can you not tell me what proportion this model is to that machine?

Ans. I don't consider that a fair question at all.

X-int. 303. Please answer my last question.

Ans. I don't know.

X-int. 304. Is not 9½ the one-sixth of 57?

Ans. Yes, sir; that's what I make it.

X-int. 305. Then is not this model a proportion of one to six as compared with the full-sized machine?

(Objected to, because even if the cutter-bars have that proportion to each other under the supposition stated, it does not follow from that that the other parts are made in the same proportion.)

Ans. If that would be the full size of the machine I would call this model two inches to the foot.

X-int. 306. Taking that same scale and measuring the seat on this model from at the back of the seat, which I now do and find to be two inches and a half high, would not the height on the old machine have been fifteen inches?

290 (Complainants' counsel states as this line of questioning re-

lates purely to matters calling for expert knowledge in the mechanical part of the manufacture and use of harvesting machines and models, and as the witness has not been called nor examined in chief, either as an expert nor as to any matter of fact now inquired about, has given his personal knowledge and has no expert knowledge as to such matters, and as it is unjust to the witness to keep him from his business for such purposes; unjust to complainants to require him to keep counsel here, at considerable expense, for the same purposes, as also to print such questions and answers; for these and other good reasons complainants' counsel instructs the witness to refuse to answer this or any other like question. It is also suggested that the matters sought to be proven, if material to the case, belong to defendants' case in chief, which is closed, and defendants have no right, either legal or equitable, to reopen it, except by leave of court, particularly at complainants' expense.

Defendants' counsel replies that the witness has testified that, so far as his recollection goes, (and also from general appearance), that the model shows the various parts in about the same proportions as the old machine tried in the green rye, therefore insists that he has the right to show by the witness himself that if that be so, what would be the result.

To which complainants' counsel suggests that expert mechanical testimony going to the fractional parts of an inch cannot be based on an old "recollection" nor "general appearance," and for this additional reason the testimony now sought to be taken would not be admissible for any purpose, and insists on his objection and instruction.

Defendants' counsel suggests to complainants' counsel that he instructs the witness to answer the question, and leave it to the court as to whether or not it is admissible.

Complainants' counsel prefers that defendants' counsel should take the question as it stands to the court in a reasonable time, if he wishes to do so.)

Ans. I decline to answer the question, under direction of the counsel.

291 X-int. 307. You have said "you would call this model two inches to the foot;" now, figuring on that scale, the height of the seat on the model being two and a half inches, the height of the seat on the machine must have been fifteen inches. I now measure the height of the arm to which the beater is attached, measuring from the back of the seat, the same as before and in a straight line from the main frame to the nearest point on the arm, directly over the seat, which point I have marked "A" and also notched, and I find it to be exactly six inches, which would make the height of that arm from the main frame in the old machine thirty-six inches, which would leave a clear space, between the seat and that point of the arm, as it passed over the seat, of twenty-one inches; could the driver sit upon that seat and drive the machine while the rake was in operation, without being struck?

Ans. I decline to answer that question, for the same reason.

X-int. 308. Don't you know whether or not a man could sit on that machine while the rake was in operation, without being struck, the space between the seat and the arm being twenty-one inches?

(No objection is taken to this question if it is limited to the witness' knowledge as to whether the top of a man's head is twenty-one inches above his seat when sitting down.)

Ans. I don't think there would be any room for a stope-pipe hat.

X-int. 309. Could you sit upon that machine and drive the same without the rakes hitting you?

(Witness is requested not to answer, for reasons already stated, unless he wishes to do so.)

Ans. I don't know whether I could sit on the old machine or not. I never tried it.

X-int. 310. Taking the space between the seat and the arm referred to to be twenty-one inches, could you have sat upon that machine while it was reaping without being struck by the rake arms?

Ans. The driver wouldn't have his head where you measured to, no-
how. I don't know whether I could if there was not more
292 than twenty-one inches from your head, from the seat up, but I would make it a good bit more than that, and I don't know whether the machine is in proportion to the cutter-bar, either.

X-int. 311. I now measure from the centre of the seat vertically to the arm, and find it to be four inches and a half, which, calculated by the same scale, would make the space between the driver's seat and the arm, in that old machine, twenty-seven inches. Now, could you have sat upon that machine, while the rake was in operation, without the same striking you?

Ans. I could not answer that question without trying it, for I am not satisfied whether that height you give is the same as on the old machine.

X-int. 312. Taking the space between the points named to be twenty-seven inches, could you have sat on that machine without being struck by the rake?

Ans. Not if the space wasn't more than twenty-seven inches; but I am not sure it wasn't more in that old machine.

X-int. 313. Do you know how high the rake-arms were from the main frame in that machine?

Ans. No. You would hardly suppose that a man would know from merely looking at it.

X-int. 314. Do you remember what was the character of the land on which that machine was tried?

Ans. It was a little of a hill, not much, to the best of my recollection.

Redirect examination.

Int. 315. I read to you cross-interrogatory 297 and your answer. In what year, in that answer, did you mean to say that you went to Dover to live?

(Objected to.)

Ans. In 1861.

Int. 316. And was it in that year or the year previous that you meant to say you first saw some separate parts of the old Hoffheins machine in course of manufacture?

293 (Objected to.)

Ans. It was the year previous.

(Note is made on the record, by consent, that at the noon adjournment to-day the witness was requested not to talk with any one, nor let any one talk to him about his testimony. Also, that the copy of testimony previously taken, to which the witness was referred on his cross-examination, was a copy of that taken in the Chicago case, Hoffheins against Gronberg et al.

Int. 317. Have you been suffering illness or indisposition whilst giving your testimony in this case?

(Objected to as immaterial, irrelevant, and not redirect examination.)
Ans. I have.

Recross-examination:

X-int. 318. What has been your ailment, and has it, in any way, affected your testimony here?

Ans. Nervous debility; it had a bad effect upon me; I am easily excited.

X-int. 319. Did that in any way affect your memory?

Ans. I have no doubt but it helped to confuse me yesterday.

X-int. 320. How long have you been afflicted in this manner?

Ans. For the last five years, more or less.

X-int. 321. It has preyed upon your mind considerably, has it not?

Ans. I don't know that it has preyed upon my mind; I don't allow anything of that kind.

X-int. 322. How, then, did you allow it to affect your mind yesterday?

Ans. That was something different; it was provocation more than anything else.

W. Y. LINK.

294 JACOB B. FINK, a witness produced on the part of complainants, being first duly affirmed, according to law, in answer to interrogatories propounded, deposes and says as follows:

Int. 1. State your name, age, residence and occupation.

Ans. Jacob B. Fink; fifty-six years; Dover Borough, York County, Pennsylvania; my occupation is, dealing in groceries, flour, and feed, at present.

Int. 2. Do you know Reuben Hoffheins; and, if so, how long have you known him?

Ans. Yes, sir; I have known him at least twenty-five years.

Int. 3. What was his business along, say from 1860 to 1863, and where did he carry it on?

Ans. Building reapers, threshing machines, etc.

Int. 4. Do you remember of seeing a new self-raking harvester machine, which he claimed to have gotten up; and, if so, state when first, where, and under what circumstances?

Ans. The first time I saw the invention was the first part of January, 1861—that is, seen the rake-post on the platform, in his shop, at Dover. I went to Hoffheins' shop occasionally, and when I got there the post was on the platform, and I asked Hoffheins what this meant; when he explained to me that he was going to build a self-rake.

Int. 5. State what more you know about the making of that self-raking machine.

Ans. Then, afterwards I got there, saw them making patterns, and trying them on top of that rake-post.

Int. 6. About when was that, as near as you can remember?

Ans. It wasn't a week afterwards that I was in the shop again, that I saw them at the patterns and trying them.

Int. 7. Did you see one of his machines when completed; and, if so, when first, where, and under what circumstances?

Ans. I saw a machine completed about the latter part of May, or the beginning of June, 1861, when I came home in the evening, and next morning he took it out in the field—I went along—to try it in the green rye.

X-int. 309. Could you sit upon that machine and drive the same without the rakes hitting you?

(Witness is requested not to answer, for reasons already stated, unless he wishes to do so.)

Ans. I don't know whether I could sit on the old machine or not. I never tried it.

X-int. 310. Taking the space between the seat and the arm referred to to be twenty-one inches, could you have sat upon that machine while it was reaping without being struck by the rake arms?

Ans. The driver wouldn't have his head where you measured to, nohow. I don't know whether I could if there was not more
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Ans. The first time I saw the invention was the first part of January, 1861—that is, seen the rake-post on the platform, in his shop, at Dover. I went to Hoffheins' shop occasionally, and when I got there the post was on the platform, and I asked Hoffheins what this meant; when he explained to me that he was going to build a self-rake.

Int. 5. State what more you know about the making of that self-raking machine.

Ans. Then, afterwards I got there, saw them making patterns, and trying them on top of that rake-post.

Int. 6. About when was that, as near as you can remember?

Ans. It wasn't a week afterwards that I was in the shop again, that I saw them at the patterns and trying them.

Int. 7. Did you see one of his machines when completed; and, if so, when first, where, and under what circumstances?

Ans. I saw a machine completed about the latter part of May, or the beginning of June, 1861, when I came home in the evening, and next morning he took it out in the field—I went along—to try it in the green rye.

295 Int. 8. Did he try it in the green rye on that occasion?
Ans. Yes, sir.
Int. 9. Were you present during the whole trial, or only part of the trial?
(Objected to.)
Ans. I was there the whole time they tried it at that time.
Int. 10. What was the condition of the rye; that is, about how green was it?
(Objected to.)
Ans. It was just about rightly in heads; I don't think it had any blossoms yet.
Int. 11. How long a trial did he make?
Ans. There was only one or two rounds; but one it was, I am certain of that, but I am not certain it that wasn't two.
Int. 12. How did the machine work?
(Objected to.)
Ans. It made good work.
Int. 13. Please describe the machine as it was then constructed, naming the different parts of it, and how they were connected together.
Ans. It was a two-wheeled machine, hinged cutter-bar, a wooden frame, a round platform, a rake-post, part of the finger-beam and part of the platform with a revolving rake, as the Ball machine was built at that time.
Int. 14. What do you mean by saying "as the Ball machine was built at that time?"
(Objected to.)
Ans. I mean the Ball truck and Hoffheins' improvements thereto.
Int. 15. Was there a tongue on this machine which you saw Hoffheins try in the green rye?
(Objected to.)
Ans. There was.
Int. 16. How was it connected?
(Defendants' counsel objects to the witness being led in this manner.
296 Complainants' counsel is not aware of any legal objection to this mode of ascertaining the facts.)
Ans. On the front cross-piece of the main frame. It was attached by an iron casting, with a bolt through the casting and tongue.
Int. 17. Did this give a stiff connection or a limber joint?
(Same objection.)
Ans. A stiff joint.
Int. 18. Did it have more than one revolving rake; and, if so, how many?
(Same objection.)
Ans. Two rakes and two paddles.
Int. 19. Describe how the rake-arms were connected on top of the rake-post; was one connected with the other, or were they independently jointed?
(Same objection.)
Ans. They were both on one shaft, one at one end and the other at the other end of the shaft.
Int. 20. How was it with the arms of the paddle?
(Same objection.)
Ans. The same as the rakes, at each end of a shaft.
Int. 21. Where, relative to the machine, did the rake deposit the grain?

(Same objection.)
Ans. It was what we called a side delivery.
Int. 22. At the side of what?
(Same objection.)
Ans. At the side of the platform, so that it would make a clear track for the horses on the next round.
Int. 23. How were the revolving rakes and paddles driven in that machine?
(Same objection.)
Ans. By a connection from the main shaft to the rake-post, and two pinions, one connected to the rake-shaft and the other to the coupling; there was a pinion to the main shaft also.
297 Int. 24. From what point of the main shaft was power taken to drive the rake-shaft?
(Same objection.)
Ans At or near the center.
Int. 25. Was there a seat for the driver on that machine?
(Same objection.)
Ans. Yes, sir.
Int. 26. What part of the machine was it on?
(Same objection.)
Ans. On the right hand side of the main frame, in front.

Adjourned until 9 o'clock to-morrow morning.

Now, May 3, 1878, 9 o'clock a. m., met pursuant to adjournment. Present, as before.

Examination of Jacob B. Fink, continued.

Int. 27. Describe the connection between the grain platform and the main frame in the machine we have been talking about?
Ans. The grain platform was attached to the cutter-bar.
Int. 28. You have stated that the machine had a hinged cutter-bar; please state how it was hinged.
Ans. It was hinged by a drag-bar and a stay-bar, then a hinge on the stay-bar and the inside shoe of the cutter-bar.
Int. 29. Did the cutter-bar and grain platform drag on the ground when the machine was running, or were they supported so as to run a little above the level of the ground?
(Objected to, as leading.)
Ans. It was supported to run a little above the level of the ground.
Int. 30. Please state how they were supported.
Ans. By a chain and hook.
Int. 31. Where was the hook?
(Same objection.)
Ans. It was fast on the main frame, the rear part.
298 Int. 32. What was the other end of the chain connected to?
(Same objection.)
Ans. The casting where the rake-post was fastened on—stood on to an extension that extended out.
Int. 33. Did this support both ends of the cutter-bar, or only one end?
(Same objection.)
Ans. It supported the inside end of the cutter-bar.
Int. 34. How was the other end supported?
(Same objection.)
Ans. By a wheel.

Int. 35. Look at the model now shown you (the same being brought from an adjoining room) marked Complainants' Exhibit, No. 61, and state how it compares, as to the features you have testified about, with the machine as you saw it tried in the green rye, at the time you mentioned.

Ans. It is all about the same, except that the gearing to drive the cutter-bar is not in this model; the rest of the model, as near as I can tell, is about the same as the machine I saw in the field.

Int. 36. Were you ever in Mr. Hoffheins' employ; and, if so, when did you begin with him?

Ans. I commenced working for him in 1861. I commenced for Lenhart & Hoffheins on the 22d of March, I think—it was in March any way, and then for Hoffheins, I commenced on the 1st of April, 1861.

Int. 37. Did you do anything for Hoffheins that year in the way of selling, or trying to sell his machines—I mean machines made as represented in Complainants' Exhibit, No. 61?

Ans. Yes, sir.

Int. 38. State what you did, and what time in the year you did it.

Ans. I was trying to sell machines from the time I commenced work for him. I carried a model like the one that is standing here (witness points to Exhibit No. 61), with the exception the one I carried
299 had all the gearings to drive the machine, both the rake and the knives. I carried the model from the latter part of May or beginning of June, I think it was, on till harvest, or about harvest—I couldn't exactly say that.

Int. 39. State about how many of these machines, if you know, did Mr. Hoffheins make for that year's harvest.

(Objected to.)

Ans. About six or eight.

Int. 40. Did you make any sales of any of these machines; and if so, about how many?

Ans. The sales were made conditional; provided they would perform their work right and stand the test.

Int. 41. How did they come out; did they stand the test?

(Objected to.)

Ans. They broke.

Int. 42. What part broke?

Ans. The rake; the rake-head wasn't strong enough.

Int. 43. What was done with the machines after they broke as you have stated?

Ans. They were turned into hand-raking machines.

Int. 44. How did you come to know of their breaking and being turned into hand-raking machines?

Ans. The reason I know it is I was present when they broke, and I turned some of them into hand-raking machines myself.

Int. 45. Was anything afterwards done with these machines, or any of them, to change them back again to self-rakers; and if so, when, and what was done?

Ans. In 1862 some of the machines were brought back to the shop and the improvements were put on.

Int. 46. After the improvements were put on, what was done with them?

Ans. The farmers took them out, or you may say home, and tried them again.

Int. 47. Do you mean that each farmer took back home his own ma-

chine after the improvements were put on, or that the machines were returned and sold over again to somebody else?

300 Ans. I mean, the farmers fetched the machines back again on condition that if they would stand the test that they would keep them as self-rakers.

Int. 48. How did the machines stand the test that second year, 1862?

Ans. Some stood it pretty well, and some broke.

Int. 49. What were the improvements that were put on the 1862 machines?

Ans. The rake-post was lowered for one thing, and then the rake was drove by a chain; there was another pulley like this here (witness pointing to the sprocket-wheel on the outer end of the axle in Exhibit No. 61) put right here (witness putting his fingers on the outer end of the rear cross-bar of the main frame); there it was driven by a connection, a shaft pretty much like this (witness pointing to the extensible shaft on the model).

Int. 50. How was it as to strength? Were the parts which broke the previous year made any stronger?

Ans. Yes, sir.

Int. 51. Look at the rake-post, rakes thereon, chain, sprocket-wheels, and fixtures now shown to you, and state how these compare, in your recollection, with the improvements put into the machine in 1862, as you have testified?

Ans. I cannot see any alteration; this here's the same as that was at that time.

(The rake post and other parts named in the last question and referred to by the witness in his answer are offered in evidence and marked Complainants' Exhibit, No. 62.)

Int. 52. Did you continue in Mr. Hoffheins' employment in 1862, or during any part of the year?

Ans. Yes, sir.

Int. 53. Did he make and sell that year any new self-rake machines in addition to the old machines which were altered—that is, in 1862, I mean?

Ans. Yes, sir.

Int. 54. State about how many, if you know; that is, new self-rakers.

301 Ans. About six or eight, I think; I can't say positive.

Int. 55. Did you work for Hoffheins any in 1863?

Ans. Yes, sir.

Int. 56. Do you remember of Mr. Hoffheins making any changes in the construction of his self-raker, between the harvest of 1862 and the harvest of 1863?

Ans. Yes.

Int. 57. State generally what they were, as you recollect them.

Ans. He made the rake-post some higher again, higher than the 1862 rake-post, and geared from this point here (witness pointing to the inner end of the axle in Exhibit No. 61) with two bevel pinions—one on the main shaft or axle, and one on the revolving shaft connecting with the rake-head. There was a bevel pinion on the upper end of the revolving driving-shaft, which geared into teeth on the rake-head for revolving the rakes.

Int. 58. How was this driving-shaft, as to varying its length, or becoming longer or shorter, when the machine was mowing over uneven ground?

(Objected to.)

Ans. It was the same as this here, a socket and shaft, the shaft working in the socket (witness pointing to the extensible driving-shaft which drives the rake-shaft in Exhibit No. 61).

Int. 59. Was any change made at or about the same time in the main frame?

(Objected to.)

Ans. I don't know that there was any change made in the main frame, than a casting was screwed on the inner end of the front cross-piece to get the drag-bar further out.

Int. 60. Do you remember of Hoffheins making his main frame of iron instead of wood. And if so, state when he did it first, if you recollect.

(Objected to.)

Ans. There was some machines put out in 1863—one was made with an iron frame; that machine was built after harvest in 1863.

Int. 61. Look at the model now shown you, and state how it
302 compares, as to the additional improvement you have spoken of, with the 1863 machines above referred to, leaving out of consideration the wooden cross-bar on the front end of the main frame, and assuming the loose seat to be attached back of the main axle.

Ans. I can't see but this model shows to be exactly the same as the reaper that was built at that time, except the wooden cross-piece in front.

(Model last above referred to is offered in evidence, and, for the purposes of this case, is marked Complainants' Exhibit, No. 63.)

Cross-examination by JOHN R. BENNETT, Esq.:

X-int. 62. When did you last see the machine which was tried in the green rye?

Ans. I cannot tell at present.

X-int. 63. Do you know whether any of those machines first built by Hoffheins are still in existence?

Ans. I do not know; there may be and there may not be.

X-int. 64. Have you seen any one of them within the last few years?

Ans. No, I don't know as I have; I mean the 1861 machines.

X-int. 65. Have you seen any of the 1862 machines?

Ans. I don't know that I have seen any of the 1862 machines, I may and I may not have, within the last few years.

X-int. 66. Do you know whether Mr. Hoffheins has in his possession one of those first machines?

Ans. I do not.

X-int. 67. Have you ever heard so, or been so informed?

Ans. I don't know that he has a machine of the kind, and was not informed that he has, either.

Int. 68. Have you not seen, during the past year, an old machine which you had reason to believe was one of those first machines?

Ans. No, sir.

Int. 69. Are you willing to swear positively that you know nothing as to the whereabouts of any of those first old machines,
303 and have not seen or heard of any of them within the past five years, and do you not know that Mr. Hoffheins has one of them in his possession or under his control?

Ans. I do not know anything of their whereabouts. I do not know that I have seen one of them inside of five years. I have no reason to believe that Mr. Hoffheins has one under his control, because I didn't see it; I heard they had machines down at Philadelphia, but I

don't know whether they were the first, second, third or fourth year's build. I didn't see any of them. I never heard that Mr. Hoffheins had in his possession or under his control, one of those first old machines.

X-int. 70. Have you never heard that Mr. Hoffheins has in his possession one of those old machines, built, as you say, in 1861, 1862, and 1863?

Ans. I have told you that I heard they had old machines down at Philadelphia, but I don't know when they were built.

X-int. 71. Who do you mean by "they?"

Ans. Hoffheins told me that they had some machines down there—old machines.

X-int. 72. State just what Mr. Hoffheins told you.

(Objected to as not proper cross-examination, inadmissible, and not evidence.

Ans. He told me they had the "Shellaberger" machine down there, and asked me whether I recollect how the machines was built. I answered him as near as I could recollect.

X-int. 72. Did he tell you what they were trying to do with that old machine?

Ans. Not that I recollect at present.

X-int. 72½. You and he had a general conversation at that time about the matter, had you not?

Ans. He asked me if I remember how the different machines were built; that is, the machine in 1861, 1862 and 1863.

X-int. 73. Have you and he not conversed quite frequently in reference to the matters about which you have been testifying to-day?

Ans. Yes, we have.

304 X-int. 74. Have you not heard from him, or any one else, that he has in his possession one of those old machines built in 1861, 1862, or 1863?

Ans. I do not know that I have heard any one say, either him or any one else, that he has.

X-int. 75. Have you seen any parts of any of those old machines within the past few years?

Ans. Not to my recollection.

X-int. 76. Do you not know that Mr. Hoffheins purchased one of those old machines from one Solomon Christ?

Ans. I do not know it.

X-int. 77. Did you ever hear so?

Ans. Yes, sir; I heard so.

X-int. 78. When, where, and who told you?

Ans. I think Hoffheins told me that he has got that Christ machine, but I have not seen it; seen the machine; it is only from hearsay.

X-int. 79. When did Hoffheins tell you he had that old Christ machine?

Ans. It's inside of a year; I can't tell you how long, without studying a little.

X-int. 80. Do you think it is as long ago as six months?

Ans. It may be, and it might not be, six months; I can't set a time on that.

X-int. 81. Did Mr. Hoffheins show you that machine, or have you seen it since he purchased the same?

Ans. He didn't show it to me, and I haven't seen it since, either.

X-int. 82. Did he tell you for what purpose he bought it, and why he was keeping it?

Ans. No.

X-int. 83. Just state what Mr. Hoffheins said to you at the time he told you he had purchased that machine?

(Objected to as not proper cross-examination, irrelevant and not evidence.)

Ans. I cannot recollect.

305 X-int. 84. Well, did you have a general conversation in reference to the matter?

Ans. I don't mind that we had.

X-int. 85. If you had not a general conversation, what was said?

Ans. That's pretty hard to tell, for me, indeed.

X-int. 86. Now, did you not have quite a conversation in reference to that machine, at that time?

Ans. I don't know that we had, for the present.

X-int. 87. Where was it he told you he had purchased that machine?

Ans. That's something I can't tell. I was studying about it. I can't tell where it was.

X-int. 88. Have you had any conversation with Mr. Hoffheins in reference to that machine, since the time of his informing you that he had purchased it?

Ans. I don't know that we had.

X-int. 89. Are you positive that you had no conversation with Mr. Hoffheins in reference to that machine since then?

Ans. I am not positive, but I can't recollect, at present.

X-int. 90. Will you swear positively that you and Mr. Hoffheins had no conversation in reference to that machine, within the past month?

Ans. I do not think that we had; I don't know as we had.

X-int. 91. Have you heard Mr. Hoffheins speak in reference to that machine, to or with any one during the past month?

Ans. I have not.

(Defendants' counsel states that it having been sufficiently shown by the witness, that the old machine purchased by Mr. Hoffheins from Mr. Christ is in the possession of Mr. Hoffheins, he now calls upon Mr. Hoffheins, the complainant in this case, who is present, to produce that old machine for inspection, so that the witness may be examined in reference to the same.

To which complainants' counsel replies, 1st, that the fact above alleged has not been sufficiently shown; 2d, that even if it had
306 been shown, and also if it were true, defendants' counsel would have no right to cross-examine this witness in reference to the same; and, 3d, that complainants' counsel proposes to exercise his own discretion in the introduction of proofs on his own request.)

X-int. 92. When did you first see "Complainants' Exhibit No. 61"?

Ans. I saw that this week.

X-int. 93. Where?

Ans. Back here in the dining room.

X-int. 94. Who was present?

Ans. I think Hoffheins was in. I don't know whether there was anybody else in or not.

X-int. 95. Just state what took place at that time?

Ans. I looked over the model to see whether everything was there, like the machine that was built in 1861.

X-int. 96. Why did you look over the model for that purpose?

Ans. To see for my own satisfaction.

X-int. 97. Did anybody tell you to look over it?

Ans. No.

X-int. 98. Why, then, did you look over the model to see whether it agreed with the 1861 machine?

Ans. For my own satisfaction.

X-int. 99. What did Mr. Hoffheins say during that time?

Ans. He asked me if I think it compares with the machine built at that time, 1861.

X-int. 100. Had a general conversation on the subject, had you not?

Ans. Not particular.

X-int. 101. How long did that examination and interview last?

Ans. Fifteen minutes to half an hour—somewheres about that time.

X-int. 102. During that interview was any mention made of that Christ machine?

Ans. No, sir.

X-int. 103. How many days has it been since you first saw this
307 model No. 61, and had that conversation with Mr. Hoffheins in reference to the same?

Ans. It was the first day I came here; it is about three days.

X-int. 104. During that time have you not frequently seen this model and conversed with Mr. Hoffheins in reference to the same?

Ans. I have seen the model frequently—several times; I don't mind that we have talked about this model; I was ordered out of the room here and I went into the room there, and looked over the model.

X-int. 105. During the three days that you have been here, do you mean to say that you have had no conversation whatever in reference to the subject-matter of your examination thus far—no talk with Mr. Hoffheins, except the first interview?

Ans. No, I don't mean to say so.

X-int. 106. Then you have conversed with Mr. Hoffheins in reference to these matters since the first interview?

Ans. Yes, sir; we have been talking about it.

X-int. 107. When you first examined the Model No. 61, did you find it to be a correct representation of that machine tried in the green rye?

Ans. All with the exception of the gearing for driving the cutting apparatus, which is not in the model.

X-int. 108. And you are positive that this Model No. 61 is a correct representation of the old machine that you say was tried in the green rye in 1861?

Ans. I am; the seat on this model may not be in exact proportion; it may have been a little lower in that machine; this footstep here may have been lower.

X-int. 109. When was it that you first saw Complainants' Exhibit No. 63, and where?

Ans. I saw a model like this when the model was built, in 1863 or 1864.

X-int. 110. Do you know whether this is the same model or not?

Ans. I do not know whether this is the same model or not, but it's one like it.

X-int. 111. Has any one informed you when this model was
308 made, what it was made to represent, and whether you had ever seen it before?

Ans. No one has informed me when it was made; no one has told me; I knew what it was made to represent; no one told me that I had seen it before.

X-int. 112. Do you know whether you ever saw this Model No. 63 before this week?

Ans. If I didn't see this one I saw one like it, but I don't know whether it was this or not.

X-int. 113. When did you first see this particular Model No. 63?

Ans. I don't know; I don't know whether this is the first model or not; if I knew it was the first model, I could easy answer you; it is one like the first.

X-int. 114. When did you first see this particular model, with the view of giving your testimony in this case, in reference to the same?

Ans. The first day I came here.

X-int. 115. Who showed it to you?

Ans. It was standing in there on the table, in the dining room.

X-int. 116. Who was present?

Ans. Mr. Hoffheins; it was at the same time I saw Model No. 61.

X-int. 117. Tell us what Mr. Hoffheins said to you in reference to it; to this model.

Ans. He asked whether I remember that the machine was built like this model, and I told him I couldn't see any alteration between that machine and this model, except this bar (witness points to the wooden bar across the front of the main frame); I don't mind of anything else he said.

X-int. 118. What machine do you refer to in your last answer?

Ans. The 1863 machine.

X-int. 119. And, with this one exception, this model is a correct representation of that machine, is it not?

Ans. It is, as near as I can tell.

309 X-int. 120. Did Mr. Hoffheins tell you when this model had been made?

Ans. No, sir.

X-int. 121. Did he not say that you had seen this model before, or to that effect?

Ans. No, sir.

X-int. 122. Will you swear positively that you have related all that Mr. Hoffheins said to you in reference to this model?

Ans As near as I can tell, I have given you all that I know.

X-int. 123. Have you not talked frequently with Mr. Hoffheins during the last few years, in reference to this model, or one exactly like it?

Ans. No, sir.

X-int. 124. Have you not testified heretofore on behalf of Mr. Hoffheins in reference to this same subject-matter?

Ans. Yes, I have.

X-int. 125. How often?

Ans. Three times before this, and this is the fourth.

X-int. 126. When first?

Ans. I think it was in 1864, but I don't know rightly; I think it was in 1864.

X-int. 127. On what occasion?

Ans. Reese-Hoffheins interference.

X-int. 128. Did you not, on that occasion, testify in reference to the Model No. 63, or one precisely like it?

Ans. I think I did.

X-int. 129. If this is not the same model, is it not one precisely like it?

Ans. Yes, sir; it is one like it, or else the same one.

X-int. 130. Have you read over your testimony given in that interference case?

Ans. Yes, sir.

X-int. 131. When did you read it over?

Ans. The time I was out there in the back room; it was lying on the table, and I picked it up and read it.

310 X-int. 132. Did anybody tell you to read it over?

Ans. Not in particular; it was laying there, and I picked it up and read over it.

X-int. 133. Then some one did tell you to read it over, did they not?

Ans. No.

X-int. 134. No one told you, during the time you have been here, to look over that deposition of yours?

Ans. No one told me; after I had been in the room and looked over it, they asked me whether I had read over it; I told them I did.

X-int. 135. Who asked you?

Ans. Mr. Hoffheins.

X-int. 136. What else did Mr. Hoffheins say?

Ans. He asked me whether I could remember what I said in that deposition.

X-int. 137. Did he talk to you in reference to it?

Ans. Not in particular.

X-int. 138. Before reading over your testimony, did anybody tell you to look over those papers lying on the table?

Ans. I don't think they did; not that I can recollect.

X-int. 139. How did Mr. Hoffheins come to ask you if you had read it over?

Ans. That is more than I can tell; they were laying there on the table, and I suppose he thought I had read it, because they were laying on the table before me.

X-int. 140. Was Mr. Hoffheins in the room during the time you were reading, or just before you commenced?

Ans. I don't know that he was; he took me out there because I wasn't allowed to be in here, and told me to amuse myself there.

X-int. 141. How long did he stay out there with you?

Ans. Not more than a couple of minutes—I couldn't just say how long, because I didn't look at the watch.

X-int. 142. Did he tell you to amuse yourself looking over the papers on the table, or refer to them in any way?

311 Ans. No, not that I recollect.

X-int. 143. Did he say anything to you about them, or hand you any papers?

Ans. No, I don't think he did.

X-int. 144. Did he lay the papers containing your deposition open before you?

Ans. No, sir.

X-int. 145. Did he handle the papers laying on the table, or do anything to attract your attention to them?

Ans. No.

X-int. 146. Was it the first paper you picked up?

Ans. I think it was about the first paper I picked up; the reason why was, that I saw the seal on there, and I wanted to see what it was.

X-int. 147. Did it lay open at your deposition?

Ans. No, sir.

X-int. 148. Did you read the whole document?

Ans. I read over mine and some of the others.

X-int. 149. How did you know that that document contained your deposition?

Ans. As soon as I opened it I saw that it was depositions; I saw some of the witnesses' names that were examined the same time I was; then I searched for my deposition.

X-int. 150. Had you been left entirely by yourself, without any intimation or inference in any way, manner or form, would you have read that deposition of yours and known that it was among the papers on the table?

Ans. I was left all by myself; Hoffheins came out here in the room here again; he said I should pass my time in there, being as I wasn't allowed in here, and then Hoffheins left the room and came into this department again, and then I took this book up and read in it and saw that it was depositions.

X-int. 151. Was that the only book or paper there?

Ans. No; it wasn't the only book or paper there.

X-int. 152. Did Mr. Hoffheins give you a seat at the table where the papers were lying, or did he point to them?

312 Ans. No, I took a seat on the settee.

X-int. 153. How did you come to go over to the table where the papers were, and what attracted your attention to them?

Ans. As I told you before, the seat attracted my attention, and the settee is only about three or four feet from the table.

X-int. 154. Will you swear positively that Mr. Hoffheins, or no one else, either by inference, intimations, signs, writing, or in any manner whatsoever, attracted your attention to the document containing your deposition?

Ans. No, sir.

X-int. 155. Prior to your going into the room, did one any tell you to read your deposition?

Ans. No.

X-int. 156. At any time prior to your reading your deposition, did any one tell you to read your deposition?

Ans. I read over that deposition may be a year or two ago.

X-int. 157. Did any one during the past month tell you to read over that deposition, or did any one read it over to you, or did you hear it read over?

Ans. Not inside of a month.

X-int. 158. When last, prior to your reading it over in the back room, did you read that deposition?

Ans. About a year ago—when Hoffheins took depositions in the Chicago case.

X-int. 159. When next, after the Reese interference, did you testify on behalf of Mr. Hoffheins in reference to these matters?

Ans. I don't know rightly—I think it was in 1867.

X-int. 160. On what occasion?

Ans. I cannot say now what it was about. It was something about the rake, but I don't know what it was now.

X-int. 161. Have you read over that deposition this week?

Ans. I believe I have.

X-int. 162. Where?

Ans. In the back room.

X-int. 163. How did you come to read that deposition over?

313 Ans. It was laying on the same pile.

X-int. 164. What attracted your attention to that?

Ans. Why, after I read the first I looked for the second, and I looked also for the third, and I found them and read them; read all three.

X-int. 165. They were three separate documents, were they not?

Ans. Yes, sir.

X-int. 166. Were they in a pile by themselves, or mixed up with other papers, or were there any other papers at all on the table?

Ans. There were other papers on the table, and these papers were lying in a newspaper, so that anybody could see—one on top of the other in one pile.

X-int. 167. Did Mr. Hoffheins ask you whether you had read over that deposition?

Ans. He asked me when he came in in the evening if I had read over those depositions, and I told him I did.

X-int. 168. When next did you testify on behalf of Mr. Hoffheins in reference to these matters?

Ans. About a year ago.

X-int. 169. And I understand you to say that you read over that deposition at the same time, and under the same circumstances as the other two?

Ans. Yes, sir.

X-int. 170. Did you not, on the occasion of your last testifying, identify a model as being the same as the machine tried in the green rye, with the exception that the large machine had a wooden frame?

(Complainants' counsel suggests that defendants' counsel hand witness his copy of the testimony referred to, that he may see exactly what he did say.

Defendants' counsel replies that the witness has already seen entirely too much for a witness that has been called to testify as to what he now remembers of certain events that happened more than seventeen years ago, and as to the various parts of a certain machine tried fully as long ago.

314 Complainants' counsel suggests in reply, that there is no more impropriety in a witness refreshing his recollection by reference to a former deposition, than in refreshing it by reference to a day-book, a family Bible, or any other old document or record.

Defendants' counsel replies that complainants' counsel very carefully avoided drawing out on direct examination, or making any note of the fact that the witness was testifying with the full knowledge of the contents of his former deposition; and from the record it would appear that the witness has been testifying from memory alone, and not from his memory aided and refreshed by those documents and the contents thereof.

Complainants' counsel states that he deemed it unnecessary to call attention to those documents, as he knew very well that defendants' counsel would save him the trouble.)

Ans. May be I did.

X-int. 171. Did you not on that occasion have this Model No. 63 before you, or an exact duplicate of the same, and did you not identify it?

Ans. May be I did.

X-int. 172. Don't you know that you did?

Ans. I am not right certain.

X-int. 173. Did you not, on that occasion, testify in reference to this model, or an exact duplicate of the same?

(Objected to as a mere duplication, in substance, of X-int. 171, which was fully answered.)

Ans. I think it may be the same model, but I don't know.

X-int. 174. Do you remember the model that was before you at that time sufficiently to identify the same?

Ans. I don't know as I do.

(Defendants' counsel requests the examiner to instruct the witness not to converse with any one in reference to the subject-matter of his examination, nor to allow any one to talk to him or in his presence in reference to the same, nor to read any document or papers in reference to the same, nor allow them to be read in his presence.

315 Complainants' counsel denies the authority of the examiner to give any such instructions, and denies the authority of anybody to prevent a witness from refreshing his recollection at any time, in any place, and in any manner he pleases.

Defendants' counsel states that the witness is still under cross-examination, and, in view of that fact, the instructions to the witness are perfectly proper and in accordance with the rules.

The examiner read the foregoing to the witness.

In view of the fact that the examiner feels somewhat embarrassed as to what he should do in the matter, defendants' counsel assumes the responsibility of instructing the witness as above stated, and will interrogate him to-morrow in reference to the same.)

Adjourned until to-morrow at 8½ o'clock.

May 4th, 1878, met pursuant to adjournment; present as before.

Cross-examination of Jacob B. Fink resumed:

X-int. 175. How long was it from the time you saw any parts of the machine until you saw it completed and tried in the green rye?

Ans. About eight or ten months.

X-int. 176. When did you first see any parts of that machine?

Ans. About October, 1860, I seen some parts of it.

X-int. 177. What parts of it did you see?

Ans. Why, patterns he was working at.

X-int. 178. What patterns?

Ans. To the self-rake.

X-int. 179. How many patterns did you see at that time?

Ans. I cannot tell just how many; I seen them working at them.

X-int. 180. What particular patterns were they?

Ans. Of the self-rake.

X-int. 181. What parts of the rake?

316 Ans. The top part.

X-int. 182. Was there only one pattern?

Ans. I couldn't say that there was only one pattern.

X-int. 183. How do you know there was any more?

Ans. There's a good many pieces to the rake.

X-int. 184. How many pieces, and what particular pieces were they?

Ans. I can't name them, and can't tell how many pieces they were working at.

X-int. 185. How do you know they were working at any pieces for that machine?

Ans. I was so informed by the man that worked on the patterns.

X-int. 186. Then all you know about that is what somebody told you?

Ans. Yes; and I saw Hoffheins drafting also, and he told me he was going to build a self-rake.

X-int. 187. Were those patterns for castings?

Ans. That I can't tell.

X-int. 188. You know nothing about them of your own knowledge, do you?

Ans. No, I don't know; altering the patterns and drawings that I saw there.

X-int. 189. At the same time was Mr. Hoffheins not engaged in building various machines?

Ans. Yes, sir.

X-int. 190. Who was it told you what these patterns were for?

Ans. Mr. Lauer, the man that worked on the patterns.

X-int. 191. What did he say to you?

Ans. I asked him what those patterns were for, and he told me they were for the self-rake.

X-int. 192. If you remember all this, can't you remember what those patterns were for—what particular parts?

Ans. No; I cannot.

X-int. 193. Then you did not see any parts of that machine at this time, did you?

317 Ans. No more than what they were working at.

X-int. 194. You saw some patterns, but no parts of that machine at that time, did you?

Ans. I did see patterns of part of the machine.

X-int. 195. What parts of the machine?

Ans. Parts that belong to the self-rake.

X-int. 196. What parts?

Ans. I cannot name them at present—parts that belong to the rake.

X-int. 197. Mention any one part?

Ans. I don't know that I can mention the parts.

X-int. 198. Is your memory so bad that you cannot give me the name of any one particular part that you saw at that time?

Ans. Seventeen years is a pretty long time to remember parts distinctly.

X-int. 199. You have stated that you saw certain patterns at that time; now did you, on that occasion, see any parts of that machine that was tried in the green rye?

Ans. If not the same, they were similar to them; they have been altering patterns from time to time, and whether they were the same, I cannot tell.

X-int. 200. Did you see both the patterns, and besides them certain parts of the machine at that time?

Ans. I have seen patterns there; I saw no parts of the machine beside the patterns at that time.

X-int. 201. What enables you to fix the time you first saw those patterns?

Ans. It was in the fall before I commenced selling machines for Hoffheins.

X-int. 202. What kind of machines?

Ans. Reaping machines, threshing machines, and such implements as he built.

X-int. 203. Do you mean the fall before you commenced selling his self-rake machines?

Ans. Yes, sir.

318 X-int. 204. And you are positive you saw those patterns the fall prior to your selling those self-rake machines?

Ans. Yes, sir.

X-int. 205. What connection has that with the fact of your seeing those patterns?

Ans. What do you mean by "connection?" I want to have that explained to me.

X-int. 206. What connection has the fact of your seeing those patterns with the time when you commenced selling machines for Mr. Hoffheins, so as to enable you to fix the time when you saw those patterns?

Ans. I have no particular connections.

X-int. 207. It is now more than seventeen years ago, and how do you know it was not the fall after you commenced working for Mr. Hoffheins?

Ans. I know it was the fall before.

X-int. 208. How do you know it?

Ans. I know it by my memorandum book, when I commenced selling for Mr. Hoffheins

X-int. 209. Have you that memorandum book here, and if so, will you produce the same?

Ans. Yes, sir.

(Memorandum book is here produced and shown to defendants' counsel.

At verbal request of defendants' counsel, the witness also produces another memorandum book, which he says is a memorandum of 1862, 1863, and 1864, and the same is submitted to the inspection of defendants' counsel.

(Defendants' counsel requests the examiner to transcribe on the record, from the memorandum book first above produced, the contents of certain pages, which he selects and marks, in the order in which they come in the book, "A, B, C, D, and E," also, "X, Y, Z," from first book; also, from second book produced above, certain pages selected by him and marked in order, "F, G, H, I, J, and K.")

319 (The counsel for defendants offers the above-cited pages of said books in evidence, and it is agreed that the transcript thereof shall have like effect as the originals for the purposes of this case.)

The examiner transcribes said pages as follows:

From the first book, page "A."

1861. REUBEN HOFFHEINS. *Dr.*

April	1, 6,	to 2	days	collecting.		
	10, 17,	to 3	"	peddling.		
May	16, 17, 18,	4	to	selling	reapers.	
	29, 30, 31, June 1,	4	to	selling	reapers.	
June	4 to 8,	5	to	selling	reapers.	
	10 to 15,	6	to	"	"	
	17 to 22,	6	to	peddling	and	setting up.
	24 to 29,	6	to	"	"	
July	2 to 6,	5	setting	up, &c.		
	7 to 13,	4½	setting	up	and	hauling, York.
	15 to 20,	2½	"	"	"	&c.
	22 to 27,	5	"	"	"	"
	29 to 3 June,	2	"	"	"	"
	5 to 10,	2	"	"	"	"
	12 to 17,	2	"	"	"	"
	19 to 24,	2	"	"	"	"
	26 to 31,	3½	"	"	"	"

And from page "B" of same book:

DOVER, *March* 22, 1861.

To first week collection for Hoffheins & Lenhart, to first 2 days.
29, second, 4½ "
April 13, fourth week, 3 "
15, for Lenhart, 1

10½

320 And from page "C" of same book:

1862. R. HOFFHEINS. *Dr.*

Spending money—
June 9. To ——, at Abbottstown ..... $ 44

And from page "D" of same book:

1861. March 22. Collected by Jacob B. Fink for Reuben Hoffheins:

Paid to R. H.	$ 16 00
Paid to "	74 50
Paid to "	176 43

And from page "E" of same book:

Collected by J. B. Fink on saw-mill for Hoffheins & Lenhart:

Paid to Hoffheins	$2 45

And from page "X" of same book:

Paid at Moses Wire	12
Paid at Motter's	44
Paid at Rorbaugh Dill's	40
Paid at Churchtown, lodging	87
Paid dinner, horse feed	40
April 11. Dinner and horse feed	40
12. " " "	10
17. " " 2 horses' feed	65
18 & 19. Horses' feed, victuals	75
1 shoe put on sorrel	14
May 15. Horse feed, J. Bare's	12
16. Dinner, horse feed, Petersburg	40
17. Horse feed and lodging	50
17. Dinner, horse feed	18
18. Dinner, horse feed	15
29. To sulky mended	1 00
	$6 62

321 And from page "Y," of same book:

From opposite page	$6 62
30. Horse feed	20
30. Dinner, horse feed	37
31. Horse feed	20
June 1. Dinner, horse feed	18
3. Horse feed	10
4. Lodging	90

	5. Lodging, horse feed	40
	6. Horse feed	12
	7. Dinner, horse feed	44
	10. Horse feed	10
	11. Horse shoeing	50
	14. Horse feed	20
	17. Horse feed, &c., York	52
	18. Trial	42
	20. Telegraph	40
	20. Ticket to Harrisburg	90
	Supper, lodging	62
		$13 19

And from page "Z," from same book:

	To from page before	$13 19
	To ticket to Mifflin	1 45
	Victuals, 2 meals	50
	22. Tolls for reaper crossing B	40
	25. Ticket from Mifflin	1 45
	Toll for foot-bridge	10
	Ticket from Harrisburg	90
	Dinner at York	25
	27. Dinner, horse feed, York	50
July	4. Dinner, horse feed	20
	To blacksmithing, Altland	2
	13. Dinner, York	18
	20. To horse shoeing on Bully	12
322	23. To 1 quart tar at Jno. Smith's	10
	26. To lodging at Motter's	90
	27. To dinner, ½ bush. oats, C. Underwood	65
	To toll	4
Aug.	11. To supper	25
	27. To dinner, half bush. oats, Carlisle	62
Sept.	4. To one shoe on Cate	25
		$22 19

And on page "F," in second book:

R. HOFFHEINS. *Dr.*

	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
1862.						
March 17	1	1	1	1	1	.....
May 8	1	1	½	1	.....	.....
June 9	1	1	1	1	1	1
" 16	1	1	1	1	1	1
" 23	1	1	1	1	1	1
" 30	1	1	½	1	1	1
July 7	1	1	1	1	1	1
" 14	1	.....	1	.....	.....	.....
August 4	.....	½	1	1	1	½
" 11	1	1	1	1	1	1
Sept. 2	.....	1	.....	.....	.....	.....
" 13	.....	.....	.....	1	.....	.....
Dec. 10	.....	.....	1	1	.....	.....
1863.						
March 27	.....	.....	.....	½	1	.....

323 And on page "G," from said second book:

	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
1863.						
April 27	1/2					
May 4	1/2	1				
" 25	1	1	1	1	1	1
June 1	1	1	1	1	1	1/2
" 8		1/2	1	1/2	1/2	1
" 15	1	1	1/2	1	1	1
" 22	1	1	1	1		
July 8			1/2	1	1	1
" 13	1	1	1	1	1/2	
Sept. 21	1					
1864.						
Feb. 20				1	1	1
March 10				1		
" 28		1				

And from page "H," in same book:

	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
1864.						
April 9						1
June 1				1		
" 13		1			1	1
" 20	1	1	1	1	1	1
" 27			1	1	1	1
July 3	1	1	1			
Dec. 1		(*)	1	1		
Jan. 5		(*)			1	1
" 9	1	(*)				
Feb. 6	1	1				
" 27	1					

*Settled.

324 And from page "I," in same book:

1862. Received of R. Hoffheins:

May	9.	To by cash	$2 00
June	16.	To by cash	5 00
July	4.	To by cash	20 00
		To at Baughman's	9 75
		To at Farance, cider	1 00
		To at Marches	10 00
1863.			
June	1.	To by cash	10 00
		To by cash	5 00
		To by cash	5 00
	21.	To by cash	11 50

And from page "J," in same book:

1862.			
		Spended for R. Hoffheins, during peddling and setting up, &c., to at Abbottstown	44
		To at York	44
June	16.	To New Cumberland	15
	27.	To Shoremanstown, lodging	90
		To horse fed and dinner	44
		To crossing bridge	50
July	1.	To paid at York depot	31
		To gate	4
	4.	To freight for side and rake	25
		To rench, at Small's	50
		To freight to Harrisburg	90
		To lodging and supper	62½
	5.	To ticket to Mifflin	1 45
		To crossing bridge and breakfast	30
		To stage, Samuel Leonard's	37
		To express for these things	1 25
		To telegraph dispatch	54
			$9 41

325 And from page "K," in same book, continued:

		To from opposite page	$9 41
July	7.	Drilling, &c., at shop	1 00
	5.	Crossing the bridge	25
	8.	Crossing to see again	15
	9.	To Curley Seets and drilling	2 25
	10.	To irons for steps and screws, &c	80
		To Harrisburg	1 45
	11.	To lodging	75
		Horse hire	1 25
	12.	To lodging	75
		To York	90
		Dinner and drink	30
	14.	To 1 cedar bucket	62
	19.	To freight for Yetter	30
		To spending money	20
		To 2 horses fed and dinner	62
		To spending	40
		To dinner and horse feed	44
Sept.	2.	To dinner and horse feed	50
	11.	To expenses	31
Dec.	10.	To expenses	
			$22 75

X-int. 210. What is there in these memorandum books to enable you to fix the time when you saw the patterns?

Ans. Nothing.

X-int. 211. Please give the day of the week and month when you saw these patterns?

Ans. I can't give the day of the week and date of the month.

X-int. 212. How did you happen there at that time?

Ans. I happened to be at the shop occasionally—I lived only about two hundred yards from there.

326 X-int. 213. When was it you first saw any parts of the machine that was tried in the green rye?

Ans. The latter part of May or beginning of June, 1861.

X-int. 214. When was it that you first saw the machine completed, and where?

Ans. It was in May, at Hoffheins' shop—I think it was in May.

X-int. 215. What time in May?

Ans. I couldn't just say what time in May, but it was a couple of days before we went out into the field.

X-int. 216. What part of May?

Ans. It was the latter part of May.

X-int. 217. Was that the first completed machine you ever saw with Hoffheins' self-rake?

Ans. I have often seen machines very near completed; then, after-afterwards, Hoffheins saw that he could improve, and put the improvements on, so I cannot say that the machine was completed till Hoffheins took the machine in the field to try it in the green rye.

(Answer objected to as not responsive.)

Question repeated.

Ans. Yes.

X-int. 219. Are you positive it was not in June that the machine was tried in the green rye?

Ans. No; I am not positive.

X-int. 220. Have you no way by which you can fix the time definitely?

Ans. I have not.

X-int. 221. What enables you to fix the time at all when that machine was tried in the green rye?

Ans. It was tried in the green rye about the time the rye commences to bloom. It was about fairly in heads.

X-int. 222. Does that enable you to fix the year when that machine was tried?

Ans. No, sir.

X-int. 223. How do you fix the time?

Ans. This first memorandum book enables me to fix the time when I commenced to work for Hoffheins.

327 X-int. 224. Is there anything in that book that shows when that machine was tried?

Ans. No, sir.

X-int. 225. Then how does that enable you to fix the time?

Ans. It was the first year that I sold for Hoffheins.

X-int. 226. How does that connect itself with the time the machine was tried in the green rye?

Ans. Because it was the first year that I sold for Hoffheins that the machine was tried in the green rye.

X-int. 227. Have you no other way by which you can fix the time?

Ans. No, not in particular.

X-int. 228. It is entirely a matter of memory as to the time when that machine was tried in the green rye, is it not?

(Objected to as an evident effort to mislead the witness, the extent to which it is a matter of memory by association of one fact with another being perfectly apparent from his previous testimony.

In view of the fact that the objection amounts to a caution, if not a direct instruction to the witness, the question is withdrawn.

Complainants' counsel suggests that the withdrawal of the question under the circumstances clearly indicates that the objection is well taken.

Defendants' counsel protests against the witness' attention being called to the notice of certain questions in the form of an objection, which, to say the least, is highly improper during cross-examination.

Complainants' counsel is not aware of any impropriety therefor on his part.

X-int. 230. How long was it after seeing the completed machine until the trial took place in the green rye?

Ans. May be a day or two—I can't say exactly.

X-int. 231. On what day did the trial take place?

Ans. I cannot tell what day.

X-int. 232. What time in the day was it?

Ans. It was in the morning.

328 X-int. 233. Have you no recollection as to the day?

Ans. I have not.

X-int. 234. Did you see them take the machine out of the field?

Ans. Yes, sir.

X-int. 234½. Who took it out, and what time in the morning was it?

Ans. Hoffheins took it out; it was early in the morning.

X-int. 235. What had you been doing the day previous to the trial?

Ans. I think I was out selling for Hoffheins.

X-int. 236. How, then, did you know it was to be tried that morning?

Ans. I got home the evening before, and they told me it was to be tried.

X-int. 237. Who told you it was to be tried?

Ans. Some one of the shop hands.

X-int. 238. What time in the evening before was it that you returned?

Ans. I can't set a particular time.

X-int. 239. How long after the trial in the green rye did you start out to sell machines with Hoffheins' self-rake?

Ans. I started out the same day yet; right after the trial.

X-int. 240. How did they take that machine out to the field?

Ans. They put it together at the shop and took the team and hauled it out; hitched the team in and hauled it out.

X-int. 241. How many horses did they take it out with?

Ans. Two.

X-int. 242. As soon as they got out to the field, did they commence cutting with the machine at once?

Ans. No; they greased the machine and put it in order to work.

X-int. 243. Who drove the horses?

Ans. I think it was Al. Weaver that drove the horses.

X-int. 244. Whose horses were they?

Ans. I think they were Weaver's horses.

X-int. 245. Had that machine the seat on it while it was cutting rye?

329 Ans. I think it had.

X-int. 246. Did the driver sit upon the machine while the machine was in operation cutting rye?

Ans. I don't think he was.

X-int. 247. Where did he ride, if at all, or did he walk?

Ans. I think he rode on the horse.

X-int. 248. Do you know why he didn't ride on the machine?

Ans. He preferred riding the horse.

X-int. 249. Did you ever see any one ride upon that machine while reaping?

Ans. I don't think I did.

X-int. 250. Don't you know that, so far as your knowledge goes, you saw no one ride upon that machine tried in the green rye while reaping?

Ans. I don't know that I have seen any one on.

X-int. 251. Where was the seat located on that machine?

Ans. On the cross-piece on the right-hand side of the main frame.

X-int. 252. Was there not a piece fastened on to that cross-piece in front of the main frame, running out in front and to the sides of the main frame, to which the seat was attached?

Ans. There was a piece—I don't exactly know whether it was casting or wrought iron—on the right-hand end of the front cross-piece of the main frame. The seat was fastened on the top of that iron piece and by the same screws that kept the foot-step screw to this iron extension.

X-int. 253. How far did that piece extend out?

Ans. That is something I can't say positively.

X-int. 254. Did it extend out to the front, or to the side?

Ans. To the side.

X-int. 255. Did it extend out a foot or three feet?

Ans. It didn't extend out that far.

X-int. 256. Well, how far did it extend out?

(Complainants' counsel requests that the question be made more definite by reference to some points, such as the driving-wheel, within which or beyond which the piece may have extended.

330 Defendants' counsel refuses to make any response to the request.)

Ans. I can't tell exactly, but it might have been about four or six inches. I never measured it.

X-int. 257. Will you swear it was not a foot?

Ans. It was no foot.

X-int. 258. The seat was attached to that casting and not to the cross-piece; is not that so?

Ans. It was on that casting.

X-int. 259. What became of that machine after the trial?

Ans. I think it was brought home to the shop again.

X-int. 260. What was done with it?

Ans. I can't say what was done with it. They had the machine afterwards, and tried it again. I wasn't along then.

X-int. 261. Where did that second trial take place, and when?

(Note is made here by complainants' counsel that any testimony given in answer to this question must necessarily be "hearsay" in its character, and while he personally has no objections, except on the score of time and expense, to the records being lumbered up with testimony of that character, if defendants' counsel considers it proper and material to his case, he still interposes the usual legal objection.)

Ans. In the same field they told me. I can't say when it was.

X-int. 262. Do you know whether any changes were made before that second trial?

Ans. No; I do not.

X-int. 263. Was the seat on that machine within the circumference of the fake?

Ans. I think it was.

X-int. 264. What was the height of the seat above the main frame?

Ans. I can't tell. I never measured it.

X-int. 265. Was the top of the seat on a level with the top of the wheels?

(The examiner is requested to note that the present cross-examination is being made in the absence of all models.)

331 Ans. That I can't say.

X-int. 266. What was the height of the rake-post?

Ans. Can't tell. I never measured it.

X-int. 267. Was not the top of the rake-post about on a level with the top of the wheels?

Ans. No, sir; it was higher.

X-int. 268. How much higher?

Ans. Cannot say how much higher. It was the high rake-post that was on at that time.

X-int. 269. Was it three inches higher?

Ans. I cannot say. I never leveled it.

X-int. 270. Do you think it was as much as three inches?

Ans. I think it was more, but I can't tell for certain. I don't know, as I never leveled it off.

X-int. 271. Please examine the photograph now shown to you, and state whether or not the rake-post, as there shown, is about in the same proportion as in the last old machine.

(Objected to, if it is proposed to prove anything more than what the witness thinks about it, judging also from sight of the photograph and recollection of the machine.)

Ans. This is a photograph of the 1863 machine.

(Answer objected to as not responsive.)

Question repeated.

Ans. That I can't say.

(The photograph referred to is offered in evidence, and marked "Defendants' Exhibit, Photograph A, York.")

X-int. 272. Was there not on that old machine a place directly back of the axle for the seat?

Ans. Not that I know of at present; not to my recollection.

X-int. 273. Do you mean that there was but one place on that machine for the seat?

Ans. There was a place for a seat between the wheels, or rather back of the axle, for mowing.

X-int. 274. Did you ever see the beater placed there, in that position, for reaping?

332 Ans. No, sir; that is, not on that machine.

X-int. 275. Could a man have occupied the seat, in that position, while reaping, without being struck by the rake?

(Objected to as a question involving measurement, or other information which the witness does not possess, and any answer he may give must necessarily be that of an opinion.)

Ans. No; not on the seat where the driver was to sit for cutting grass.

X-int. 276. Prior to the trial in the green rye, what kind of machines had you been selling for Mr. Hoffheins?

Ans. I sold hand-raking machines, and also tried to sell self-rakes.

X-int. 277. Did you continue to sell hand-rakers after the trial?

Ans. Yes; and also self-rakers.

X-int. 278. Is there anything in the two memorandum books to show that you sold self-rakers in 1861?

Ans. No; there's nothing.

X-int. 279. How long did the trial in the green rye last, and who was present?

Ans. They cut one or two rounds—I don't know how long it took. Weaver was there, for one, William Lenhart, Reuben Hoffheins, and myself, and I think a couple of the shop hands, but can't now say who they were.

X-int. 280. Who got the first one of those self-rake machines that went out?

Ans. I think the first one was shipped to Samuel Leonard.

X-int. 281. Where did he live, and when was it?

Ans. He lived in Juniata County; I can't say when it was shipped; I know when I went up there to set it up.

X-int. 282. When did you set it up?

Ans. I started on the twentieth of June (witness refers to his memorandum book, pages "Y" and "Z"), 1861.

X-int. 283. Is there anything in that book that enables you to say that you set up a machine there at that time?

Ans. No more than what I referred to, than what I have shown in the book.

333 X-int. 284. Quote from the book what it is that enables you to say so.

Ans. 20th of June, 1861, ticket to Harrisburg, 90 cents.
Supper and lodging, 62 cents.
21st, ticket to Mifflin, $1.45.
21st, victuals, 2 meals.
22d, toll for reaper across the bridge, 40 cents.

X-int. 285. Do those mere entries alone, to which no name is attached, enable you to say that you set up a Hoffheins self-raking machine at that time and place?

Ans. Those entries and my memory.

X-int. 286. Are you willing to swear positively that you set up one of Hoffheins' self-rakers at that time and place?

Ans. I am just as positive as I am that he is sitting right in front of me.

X-int. 287. Who got the next one of those first machines?

Ans. That is more than I am able to tell.

X-int. 288. Can't you refer to your book and tell in the same way as you did before?

Ans. No, sir.

X-int. 289. You have said that there was disposed of six or eight of Hoffheins' self-rake machines in 1861; tell me the names of all the parties who took Hoffheins' self-raking machines from you that year.

Ans. I don't know whether I can mention them all or not; I can a part of them; McCullough, Juniata County, near Oakland Mills; that is his post-office address; William Neiman, in Manchester township, York County; John Detfer, in Washington Township, near Kralltown, York County; Israel Heilman, Weiglestown, York County. I cannot just mention the others now; it's queer that they slipped my memory.

X-int. 290. Did you not sell one that year to Daniel Smyser?

Ans. No, sir; I think that was in 1862 he got that machine.

X-int. 291. Did you not sell one that year to J. B. Baughman?

Ans. I did not.

334 X-int. 292. Did you not sell one to Zachariah Smyser that year?

Ans. I think I did.

X-int. 293. Did you not sell one to G. N. Bressel?

Ans. I don't think I did; I think he got his in 1862, if I aint mistaken.

X-int. 294. Did you not sell one to Isaac King and Christian Dick that year?

Ans. I think they got a 1862 machine.

X-int. 295. Did you not sell one to E. H. and H. Free in that year, 1861?

Ans. I did not.

X-int. 296. Did not Mr. Solomon Christ get one of those first machines, made in 1861?

Ans. No; think that was an 1862 machine.

X-int. 297. What reason have you for saying he did not get one of those first machines?

Ans. I am pretty certain that I went there in 1862 to set up the machine.

X-int. 298. Can you give no reason for saying so?

Ans. No more than the way the 1862 machine was built.

X-int. 299. Had the machine that Solomon Christ purchased a seat on it?

Ans. I don't think it had; I don't think any of the 1862 machines had seats.

X-int. 300. Did you ever change one of those first machines to a mower?

Ans. Yes, more than once.

X-int. 301. Did you not, for mowing, put the seat directly back of the axle?

Ans. It was back of the axle; I can't say just how close it was.

X-int. 302. Had all those 1861 machines seats on them, the same as the one tried in the green rye?

Ans. No.

X-int. 303. How many of those had seats on?

335 Ans. All the hand machines that we sold, and also the self-raking machines.

X-int. 304. And the 1862 self-rakers, I understand you, had no seats on?

(Objected to, unless the counsel for the defence will specify which seat he means.)

Ans. Not for reaping; but for mowing.

X-int. 305. Did you ever see any one sit upon any of those 1861 self-raking machines, while reaping?

Ans. I don't think I have; I am certain I haven't.

X-int. 306. Were all those 1861 self-rake machines returned for alteration?

Ans. I think they were; but I don't think they all got the 1862 improvements on; some waited for the 1863 improvements.

X-int. 307. Did they take the seat off of those machines when they were altered?

Ans. I think they were not put on any more; that is, for reaping.

X-int. 308. Why didn't they put the seat on?

Ans. Because the rake-post was lowered.

X-int. 309. It would have been impossible for a man to have sat on that 1862 machine when reaping, would it not?

(Objected to, unless the witness answers from personal knowledge of having seen it tried, or having measured it, and the questioner is also requested to specify which machine he is asking about, the 1862 machine, or the 1863 machine.)

Ans. I want to know which machine, 1862 or 1863 machine?

X-int. 310. On the 1862 machine.

Ans. I mostly think that a man couldn't ride on that machine when reaping; but I didn't measure it, and I didn't see it tried.

X-int. 311. In what proportion to the full-sized machine was that model which you carried with you to sell machines from in 1861?

Ans. I never measured it as to proportions.

X-int. 312. Does this model, No. 61, correctly show the seat arranged as in the machine tried in the green rye?

336 Ans. It is pretty close.

X-int. 313. In the 1861 machine, was there not an iron piece projecting out from the cross-piece in front of the main frame, and to which the seat was attached?

Ans. Yes; but this cross-piece on the model is longer than the one on the 1861 machine.

X-int. 314. Then you do not find in the model the same arrangement as to the seat as in that old machine, do you?

(Objected to, unless it is specified what is meant by arrangement.)

Ans. This iron aint on.

X-int. 315. Please examine the model, Defendants' Exhibit, No. 63, and state whether the seat is not arranged in that model the same as it was in the machine tried in the green rye.

Ans. No, sir.

X-int. 316. If you did say so at the time of giving your testimony in the Reese-Hoffheins interference, was it the truth?

Ans. It was the truth if I did say so; but I didn't say so.

X-int. 317. Please read from the certified copy of the deposition given at that time, interrogatory 18, and state whether, or not you did not on that occasion say the seat was on like it is in Exhibit A, being this same model, No. 63, or a duplicate.

(The last statement of the question objected to, in so far as it assumes or states that the same seat was on the two models, and arranged in the same manner.

(Defendants' counsel states that the witness has already testified during his cross-examination that on the occasion of his testifying in the Reese-Hoffheins interference, he testified as to this same model, or an exact duplicate thereof.

Which complainants' counsel denies—speaking, however, from recollection.

Defendants' counsel refers complainants' counsel to cross-interrogatories 127, 128, and 129, where he will find the subject-matter contained in the question.)

Ans. The seat was the same as this, except that it was on a wooden spring fastened back here, pretty much as this here is, and

337 came out as far as this; may be a little further. I am now describing the old machine.

X-int. 318. Do you mean that it was that way in the old machine tried in the green rye?

Ans. No, sir.

X-int. 319. What machine, then, do you refer to?

Ans. I refer to the machine tried in the green rye, but the seat was changed. I think it was changed the same year.

X-int. 320. Was not the seat arranged in that way in the machine you sold in 1861?

Ans. The seat was over here in 1861, at the right-hand front corner of the main frame.

X-int. 321. Did you not testify, at the time of that interference, that the seat in those 1861 machines was the same as in this model No. 63?

Ans. Yes; but I think this here (witness holding in his hand the loose seat) seat was on it at that time.

X-int. 322. Will you swear positively that at the time you testified in reference to Exhibit A, that the seat was not as now shown in this model?

Ans. I don't know as I can positively swear it, but I think the other seat was on. Fifteen years is a long time to keep everything in memory, to be positive in all these matters which I am asked in this cross-examination.

(Taking this model No. 63, as stated in your deposition given in Reese interference, is represent' the machine sold in 1861.)

X-int. 323. Had the seat been displaced in those machines, as stated in your last answer, would it have been possible for a man to sit on that seat while the rakes were in operation, reaping, without being struck?

(Objected to, the witness not being able to answer it either from personal knowledge of seeing it tried nor from measurements taken; also, the assumption stated in the first part of the question is objected to, as incorrect, except in a general sense, and calculated to mislead the witness.

338 Defendants' counsel denies the statement made by complainants' counsel, and in proof thereof quotes the following from the witness' cross-examination in the Reese-Hoff heins interference: "X-int. 18. Look at Exhibit A (here shown to witness) and state how it compares with the machines which you say were sold, conditionally, in 1861." (Exhibit A and question objected to.) "Answer. The machine is an exact comparison, with the exception of the frame; the frame in the other machine is a wooden frame with three sills and two cross-pieces. The one behind and the other in front. The shaft that drove the rake was inside or between the two driving-wheels, and was inclined. The seat was on like it is in Exhibit A. There was a slight difference in the cogs of the rake-arm, but it had the same motion as it has now. The platform, the rake, and the cutting apparatus were sustained by the main frame, between the driving-wheels, just as in the model.")

Ans. I do not know that he could. The seat is not as it was at the time I gave that deposition; it is not at the same place; there was one more seat on; it was right on here, on the outer right-hand corner of the main frame. This front cross-piece, Exhibit A, had been put on to show where the seat was placed in the 1861 machine. The seat that was on there, was one like this (the witness holding in his hand the loose seat), it just struck me while sitting here.

X-int. 324. Did you not go outside of the door a few minutes ago and say to Mr. Hoffheins something in reference to the seat—ask some information?

(Complainants' counsel requests that the entire conversation be taken down, if any of it.

Defendants' counsel states that he is conducting the cross-examination of the witness, and if complainants' counsel is not satisfied with what he brings out, he will have a chance to question the witness in reference to the same.

Defendants' counsel is reminded of the ordinary rule, that the whole of a conversation, if any of it, must be given in evidence.)

339 Ans. It just struck my mind while I was sitting here, then I went out and asked Mr. Hoffheins whether that seat wasn't placed

on the outside of that cross-piece, and he replied, "I have no right to say anything at all."

X-int. 325. Why did you go out and say anything to Mr. Hoffheins while you were on the stand and testifying?

Ans. I thought I could get information yet; I received none, or didn't get any.

X-int. 326. Has not that been your practice during the entire week that you have been here, to go out and get information from Mr. Hoffheins?

Ans. I beg your pardon; it was not.

X-int. 327. During your stay here, have you not made your home with Mr. Hoffheins?

Ans. Yes, sir; he gave me my lodging and boarding.

X-int. 328. Do you mean that at the time you testified in reference to Exhibit A, there was a piece running out from the right-hand front corner of the cross-piece, and to which projection the seat was attached?

Ans. Yes, sir.

X-int. 329. That would bring the spring of the seat entirely outside of the wheels, would it not, or very nearly so?

Ans. How it was put on I can't tell; the piece is broke off the end of the front cross-beam.

X-int. 330. In what proportion is the Model No. 61 to the large-sized machine tried in the green rye?

Ans. I cannot tell.

X-int. 331. Is it one-sixth?

Ans. I can't tell; I never measured the old machine, and I never measured the model, and I don't know whether it is made to any proportion.

X-int. 332. In reaping on uneven or rolling land, is it not the case that sometimes the divider wheels is as much as a foot, and sometimes more, above the level upon which the two driving-wheels stand?

340 Ans. I don't know.

X-int. 333. In reaping upon uneven ground and in which there are deep furrows, is it not often the case that the platform is elevated very considerably above the level upon which the two drive-wheels stand?

Ans. Yes.

X-int. 334. Assuming this model to be in the proportion of one to six to that machine tried in the green rye, could you have sat upon that machine during the operation of reaping without the rake hitting you?

(Objected to as being based on the assumption that the model is made to a scale which nowhere appears in the testimony, and in the absence of such proof the witness cannot answer the question, never having tried it on the original machine.)

Ans. I don't know.

X-int. 335. I find by measuring the height of the seat on this Model No. 61, which, calculating it to be on the scale of one to six, the seat on the old machine would have been fifteen inches high, would it not?

(Objected to as being based on incorrect and unproven assumption, and as in no respect a proper cross-examination.)

Ans. It would, but I don't know on what scale that seat was made.

X-int. 336. I find by measuring from the platform of the main frame to the beater, marked "B," which is directly over the driver's seat, being a vertical line, that is eight inches, which, figured on the same scale, would make the same beater forty-eight inches from the main frame in that old machine, would it not?

(Same objection.)

Ans. It would be true; but I don't know whether the scale is correct. The way the machine—the model—is set, you are taking the advantage.

(Defendants' counsel states that in taking the measurements the model occupies about the same position that a full-sized machine would when the horses are attached and the machine is ready for
341 reaping—the front being about a quarter of an inch higher than the back end.)

(Complainants' counsel objects to any statement such as the foregoing being entered on the record as any proofs of any fact whatever, the counsel for the defence not being regarded as a witness in the case, as to what "position a full-sized machine would occupy when the horses are attached and the machine is ready for reaping." It is also noted that according to the last answer of the witness the present adjustment of the model is incorrect or unfair, and suggestion is made that if this line of inquiry is to be pursued the witness should be allowed to adjust the machine properly before being interrogated.)

X-int. 337. The distance from the main frame to the beater—according to the scale—being forty-eight inches, and the height of the seat being fifteen inches, would it not be thirty-three inches from the seat to the beater?

(Objection noted as to cross-question 335 is continued as to this.)

Ans. I suppose that it would, according to your calculation.

X-int. 338. Will you please sit upon this stool, that I may measure how high you would sit upon the seat of the machine?

Ans. I will.

(Defendants' counsel states the witness was measured and found to sit thirty-four and a half inches from the seat up.

Defendants' counsel is objected to as a witness in this case to any fact of any kind, unless he properly assumed that position in behalf of his own clients.)

X-int. 339. Now, taking these measurements, the distance from the seat to the rake being thirty-three inches, and the height of yourself from the seat up being about thirty-four and a half inches, could you have sat on that machine without being struck by the rake?

(Objections noted to X-int. 335 continued as to this.)

Ans. No; not the way that calculation's made.

342 X-int. 340. Did you ever sit upon that machine tried in the green rye during the operation of reaping?

Ans. No, sir.

X-int. 341. Did you ever sit upon any of those first six or eight machines, built in 1861, during the operation of reaping?

Ans. No, sir.

X-int. 342. Will you now please adjust that model as you think it should be for cutting lodged grain, say about for a three-inch stubble, taking it upon the scale of one to six—in other words, adjust the cutter-knife a half inch above the table?

Ans. I will.

X-int. 343. Have you adjusted the model as you think it should be for a just and fair measurement?

Ans. Yes, sir; for a two-inch stubble.

(Defendants' counsel states that the front and rear of the main frame, and that the knife is a half inch above the floor, and the rear end of the platform about three-eighths of an inch from the floor.)

X-int. 344. Are not the above-stated measurements correct?

Ans. I think they are; yes, they are correct.

X-int. 345. Will you please measure from the centres of the driver's seat to the beater marked B, directly over the same, and state how you find it to measure?

Ans. I find it to be about six inches.

X-int. 346. I now elevate the outer wheel of the main frame one inch; will you please measure from the seat to the beater while in that position, and state what you find it to be?

Ans. I find it to be five and three-quarters of an inch.

X-int. 347. I now raise the outer wheel of the platform one inch; will you measure the distance while in that position?

Ans. I have, and I find it to be five and a half inches?

X-int. 348. Taking your three measurements, and assuming the old machine to be six times the size of this model, the distance between the seat and the beater in that machine must have been thirty-six
343 inches, the machine standing level, ready for reaping, and the distance between those same points, the outer drive-wheel being elevated one inch, must have been twenty-eight and a half inches, and the distance between those same two points, the divider-wheel being raised one inch, must have been thirty-three inches. Is not that so, assuming my proportion of one to six to be correct?

(Objected to for reasons already noted.)

Ans. Yes.

Cross-examination closed.

Adjourned until 8 o'clock p. m.

8 o'clock p. m., met pursuant to adjournment. Counsel present as before.

Redirect examination of witness:

Int. 349. In the measurements which have just been taken, between the seat and the beater, the lower end of the rule was placed about half way up the central ridge of the seat, and not on its lowest point?

Ans. Yes, sir.

Int. 350. Was any allowance made in those measurements for the yielding or spring of the "S" shape seat self-support?

Ans. No; there was no allowance made.

Int. 351. When you were measured by Mr. Bennett, you sat up straight, did you, against the wall?

Ans. Yes, sir.

Int. 352. Look at "Defendants' Exhibit, Photograph A, York," and state if that does not look a good deal like the old "Exhibit A" that you testified about in the old Reese-Hoffheins interference?

Ans. Yes, sir.

Int. 353. Were the entries on the pages which we have extracted from your memorandum books made by you at the time they bear date, in the usual course of your business, and, so far as you know, are they correct?

Ans. Yes, sir.

Int. 354. Have these books been in your possession ever since?

Ans. Yes, sir.

Int. 355. As your sales are not entered in these memorandum
344 books, state how you made your entries of sales and what you did with them, if you made any.

Ans. I had no particular entries. When I came home in the evening, I handed in the names to R. Hoffheins.

Int. 355. When you were testifying to-day in reference to a cast or

wrought iron piece on the right-hand end of the front cross-beam, I saw you had a sketch which appeared to represent it; please put that sketch in, if it is a correct representation of what you recollect on that point.

Ans. This is it.

Int. 356. As I understand it, the piece which formed the extension was right where I have marked a letter "a," and the seat was on top of that, supported by an "S" shaped spring, and the part which I have marked "b" was a foot-piece or foot-support. Is that right?

Ans. Yes, sir.

(Sketch above referred to is offered in evidence, and marked "Exhibit Fink. G. M. S., notary public.")

Int. 357. With hand-raking reapers, sixteen or eighteen years ago, where did the driver usually sit; I mean in this region of the country?

(Objected to as immaterial and irrelevant.)

Ans. On the horse.

Int. 358. Was this usual, whether two horses were employed or four?

Ans. Yes, sir.

Int. 359. Was it usual at that time for farmers to have any check reins (by which I mean driving lines) with their farm harness?

Ans. No, sir.

Int. 360. Do you remember of seeing any one sit on the front corner seat of the old 1861 machines while the rake and beaters were revolved?

Ans. Yes, sir.

Int. 361. State where it was.

Ans. In Hoffheins' shop.

Int. 362. Did the rakes or beaters strike his head?

345 Ans. No, sir.

Int. 363. Judging from that circumstance and your recollection of the old machine, do you think a driver could have sat on that front corner seat of that old machine while it was being used in cutting standing grain on ordinary ground?

(Objected to.)

Ans. Yes, sir.

Int. 364. Is Mifflin in Juniata County?

Ans. Yes, sir.

Int. 365. Was the trip which you have referred to, commenced on the 20th day of June, 1861, the first trip you ever made to that region on that business?

Ans. Yes, sir.

Int. 366. In your answer to cross-interrogatory 299 you say that you don't think any of the 1862 machines had seats. You meant, did you, seats for the driver to ride when reaping?

Ans. Yes, sir.

Cross-examination:

X-int. 367. With the hand-raking machines, did you furnish a driver's seat?

Ans. Yes, sir.

X-int. 368. Was there not also a separate seat for the raker to sit on?

Ans. Yes.

X-int. 369. Will you swear positively that you never saw a man sit on the hand-raking machine and drive the team?

Ans. I can't say that, positive.

X-int. 370. Have you not seen the driver sit on a hand-raking machine while harvesting?

Ans. Not that I know of.

X-int. 371. Did they not sit on the machine while mowing grass?

Ans. Very few, if any.

X-int. 372. Will you swear positively that you never saw a man sit on the machine while mowing, and drive with check lines, prior to 1862?

346 Ans. I can't say.

X-int. 373. I wish you to say whether or not you ever seen it done prior to that time.

Ans. I can't say more than I did to the other question; can't say whether I did or not.

X-int. 374. You said during your cross-examination that you had seen men sit upon the Hoffheins combined machine when used as a mower. Now, how do you suppose they drove the horses?

Ans. I have been sitting on myself, and the man that owned the team drove the horses or rode the horses.

X-int. 375. Question repeated.

Ans. In the last answer there that I gave I told you that I rode on them myself, and so I seen others ride on the machine and one on a horse.

(Question objected to as not responsive.)

X-int. 376. If the driver rode upon the seat in mowing, as stated in your cross-examination, how do you suppose they drove the horses?

Ans. With lines.

X-int. 377. Then they did have lines in those days, did they?

Ans. A few of them.

X-int. 378. If they used lines for driving when mowing, why couldn't they have done the same when reaping?

Ans. They could have.

X-int. 379. Now, how often, during the year 1861, did you see the driver sit upon mowing-machines and drive the horses while mowing?

Ans. Can't tell.

X-int. 380. A dozen different times, do you suppose?

Ans. Don't know.

X-int. 381. Do you think it was as often as that?

Ans. I can't tell.

X-int. 382. Did you see any one sit upon any of the hand-rake machines during 1861, and drive the horses?

Ans. I don't know that I have; they all preferred to ride the horses, or mostly all.

347 X-int. 383. But some of them did prefer to ride on the machines, did they not?

Ans. I can't tell, to my recollection, at present.

X-int. 384. Did not most every farmer, and was it not customary at that time for them to have check-lines?

Ans. No, sir; hardly one out of ten.

X-int. 385. Would it have been any trouble for those that had check-lines to put them on the team to drive with?

Ans. Yes, sir.

X-int. 386. How long would it have taken, in those days, to put on a pair of check-lines?

Ans. I don't know; it depends how convenient they would have been; providing a man would have been three-fourths of a mile from the barn, where he keeps his check-lines, to the field where he was working with the machine.

X-int. 387. Why couldn't he have put the check-lines on the horses at the time he put the other parts of the harness on?

Ans. Because when a man got a machine, he wanted to try the machine and see how it works, and rode on the horses.

X-int. 388. Why didn't he ride on the machine?

Ans. I don't know; because it was preferable to the farmer.

X-int. 389. Couldn't he have seen how the machine worked by riding on the machine than on the horses?

Ans. I don't know as he could.

X-int. 390. You haven't told me yet why they couldn't put the check-lines on at the same time that they put the other harness on the horses?

Ans. They could have, if they had any.

X-int. 391. How long would it have taken to put them on?

Ans. Just according to the man is quick in putting them on.

X-int. 392. Would it have taken more than five minutes?

Ans. I don't know as it would.

X-int. 393. Do you know whether the man that you sold the machine to in Juniata County had check-lines?

Ans. No, sir; I do not know.

X-int. 394. Now, how many times do you suppose, during the
348 year 1861, you saw the driver sit upon the seat while mowing or harvesting with a hand-rake, and drive the team?

Ans. I can't tell.

X-int. 395. Well, make what you think would be a safe guess.

(The whole of this line of examination is objected to, for the reason that a general custom or usage cannot be proven or disproven by proof of isolated instances. The objection was not sooner entered, simply because it was hoped there would be an end of it some time.

Defendants' counsel replies, that complainants' counsel endeavored to prove by the witness that check-lines were a thing almost totally unknown of in these parts, and that this cross-examination is the result of the same, and has been unnecessarily lengthened by the witness himself, who, instead of answering the questions direct, has tried in every possible way to beat around and avoid giving a direct answer.

By reference to R. D. Int. 357, 358, and 359, it will be seen that complainants' counsel only endeavored to do what is perfectly proper, to prove a usage, and as to the answers of the witness, they would seem to be quite as appropriate as the questions.)

Ans. Hardly one out of ten.

X-int. 396. If it was so unusual to sit upon the seat while driving, why did they furnish seats for that purpose?

Ans. So as the farmer had it when he wants to use it once, or at any time.

X-int. 397. Who sat upon that machine when they turned the rakes around in Hoffheins' shop?

Ans. I think I sat on myself.

X-int. 398. Did the rakes or beaters strike you?

Ans. No, sir.

X-int. 399. How near to your head did they pass?

Ans. Can't tell.

X-int. 400. How can you tell that you sat upon that machine at all?

Ans. I think I ought to know what I done.

X-int. 401. Well, then, oughtn't you to know about the rakes
349 passing over your head, and how much space there was?

Ans. I didn't look up.

X-int. 402. Why did you sit upon that machine at that time?

Ans. For the others to see how near the beaters would get to my head.

X-int. 403. Well, then, how near did they come to your head?

Ans. I don't know; the others pronounced it safe to ride on the machine.

X-int. 404. Didn't you take interest enough to see how near they came unto your head?

Ans. No, sir, but we got others to sit on; then I seen and thought it was perfectly safe to ride on.

X-int. 405. Who sat on that machine in your presence?

Ans. Hoffheins was setting on in my presence.

X-int. 406. How near did the beaters or rakes come to his head?

Ans. About 18 or 20 inches, and may be more.

X-int. 407. What was the height of the seat on that machine?

Ans. I don't know; I didn't measure it.

X-int. 408. If you can remember the distance between the rake and the man's head sitting on the machine, why can't you remember the height of the seat?

Ans. I never measured it—then I can't keep it in remembrance.

X-int. 409. How can you keep the other in your memory?

Ans. I know it was a pretty good distance off of his head.

X-int. 401. Then you don't remember whether it was six inches, or a foot, or three feet, do you?

Ans. I have given that answer, to the best of my memory, in the former answer.

X-int. 411. What was the height of the rake-post in that machine?

Ans. Can't tell; I never measured it.

X-int. 412. Have you no idea how high it was?

Ans. I have not, in particular.

350 X-int. 413. Was it about on the same proportion as shown in model No. 61?

Ans. I cannot tell; I never measured the post on the machine nor on the model.

X-int. 414. Does it appear to you to be in about the same proportion?

(Objected to as inadmissable, proof of appearance to the eye not being sufficient to constitute evidence in a matter of this kind.)

Ans. It might be very near; can't say.

X-int. 415. When was it that you and Mr. Hoffheins sat on that seat and revolved the rakes around?

Ans. When the machine was pretty near complete.

X-int. 416. Just state in what condition the machine was.

Ans. I think the machine was about very near finished. The rake and paddles or beaters were on the machine.

X-int. 417. Was the platform all finished—all completed?

Ans. I don't know that it was. I don't think it was painted.

X-int. 418. Can you tell me nothing more as to the condition of the machine, than that the rake and paddles or beaters were on the machine?

Ans. What more do you ask to be said?

X-int. 419. Everything. I want to know the exact condition that machine was in at that time.

Ans. Well, I guess we must try and define every particle of the machine. The gearing of the rake-head was on, the rake-post attached to the truck of the machine, braced about the same as the model before me, with the rakes and paddles fastened to the rake-head, with the seat

in front of the right hand driving-wheel. I think that is about all that is necessary.

(The witness, in answering the question, has before him the model No. 61.)

X-int. 420. Had it a seat on the same, as is shown in that model, No. 61?

Ans. Yes; the seat was pretty near so, with the exception of that piece of cast iron or wrought iron, what it was, is not on the
351 model, but it holds very near or the same position that the 1861 machine had.

X-int. 421. Was it the same style of seat?

Ans. It was what we call, or used to call, the "Kirby seat."

X-int. 422. Had it the same kind of support or spring, S-shape, the same as is shown in that model?

Ans. Yes, sir.

X-int. 423. If you thought a man could ride upon that machine, why didn't you try it in the green rye, while reaping?

Ans. I wasn't asked to do so. I wanted to see how the rake would perform.

X-int. 424. Why didn't you try it on some of those first machines you set up?

Ans. It was my business to see how the machine would work, and how it performed its work.

X-int. 425. How did you know how it would perform its work until you sat upon the machine and tried it in reaping?

Ans. A man has to walk after the machine to see how the machine does its work. He cannot see how the work is done if he is in front of the machine.

X-int. 426. Well, then, couldn't he see it better if he rode upon the machine than upon the horse?

Ans. I wasn't on the horse.

(Question objected to.)

Question repeated.

Ans. I want to know who he is?

X-int. 427. Any man that wanted to see the operation of the machine?

Ans. Yes.

X-int. 428. You have not yet answered my question as to why you did not try to ride upon one of those first machines while reaping.

Ans. Because I wanted to see how the rake performed its work.

X-int. 429. Why didn't you get some one else to try and ride upon the machine while reaping?

352 Ans. I didn't think of putting a man on the seat, that that would be of such a great question.

X-int. 430. And you never tried it yourself nor got any one else try to sit on those first machines, while reaping, did you?

Ans. No.

X-int. 431. Then, of your own knowledge, you don't know whether it was possible for a man to sit on those machines while reaping?

Ans. No, sir; because it wasn't tried in my presence.

X-int. 432. In setting up any of those first machines, did you ever instruct any one to try to sit upon those first machines, while reaping?

Ans. No, sir.

X-int. 433. Did you ever instruct any one that they could ride upon those first machines while reaping?

Ans. I do not know as I have.

X-int. 434. Do you think it possible that you could have rode upon that machine which was tried in the green rye, if you had been reaping on a side hill, so that the one side of the machine was, say a foot above the level of the other side of the machine?

Ans. I think it could.

X-int. 435. Suppose, while reaping with that old machine, the inner drive-wheel had dropped into a furrow, say from six inches to a foot below the level of the outer drive-wheel, do you think it possible to have sat upon that machine without the rake or beaters hitting you?

Ans. I don't know, I haven't seen it tried, that.

X-int. 436. Suppose such to be the case (as stated in the last question), how much difference do you suppose it would have made in the height of the rake or beater from the top of the driver's seat?

Ans. I don't know.

X-int. 437. Don't you think it highly probable that under such conditions it would have hit the driver?

Ans. I don't know.

353 X-int. 438. When and where did you make the drawing which you produced this evening?

Ans. Right on this table; I think it was a day or two ago.

X-int. 439. How did you come to make it, and for what purpose?

Ans. To explain more perfectly.

X-int. 440. How did you know that you would need it for explaining anything?

Ans. I was asked some questions concerning the same.

X 441. Do you mean that you was asked some questions concerning the same before you made the drawing?

Ans. I was asked some questions concerning the seat, and to more fully explain I made the drawing.

(Answer objected to as not responsive, and question repeated.)

Ans. I made it after I had been questioned.

X-int. 443. Why, then, did you not produce it yesterday when I questioned you in reference to complainants' model No. 61?

Ans. I had made another drawing yesterday, if you mind, in regard to the questions asked, which you seen me make, and they appeared to be satisfactory to you.

(Answer objected to as not responsive, and question repeated.)

Ans. I have no reason.

X-int. 443. Have you read, or heard read, any or all parts of the depositions given by Mr. Boyer or Mr. Link, who testified in this cause prior to your being called as a witness?

Ans. No, sir.

X-int. 444. Have you made no marks on either of the three pages marked X, Y, Z, No. 1, memorandum book, since 1861?

Ans. No, sir.

X-int. 445. Have you not run a pen over some portion of it?

Ans. Not over X, Y, and Z.

X-int. 446. I wish to call your attention to the foot of the page marked Y, and state whether you have not rewritten that since 1861?

354 Ans. I may have. On the last 8 lines of that page I see the dates are not in the same ink as the other.

X-int. 447. And is not the same true as to the top of the page marked Z?

Ans. I think it is.

X-int. 448. And is not the same equally true of the date "1861" on top, left-hand corner of the page X?

Ans. I think it is.

X-int. 449. When was it that you made those changes?

Ans. I think it was at the time that the former depositions were taken. It is not of late that I inked over the same, and the substance is not changed.

X-int. 450. Did you ever testify before as to things contained in that memoranda book, and were you ever asked to produce the same for examination?

Ans. I don't know that I was asked to produce it. I alluded to it, but did not testify as to the contents.

X-int. 451. When you said, in answer to recross interrogatory 445, that you had not run a pen over some portion of these three pages, X, Y, and Z, had you forgotten the fact that you had done so?

Ans. Yes, sir.

Redirect:

Int. 452. So far as you can remember, did you make any alterations in anything which you inked over?

Ans. Not any.

JACOB B. FINK.

355 United States circuit court, northern district of Ohio.

R. HOFFHEINS ET AL.
versus
C. RUSSELL ET AL. } In chancery.

Please take notice that proofs on part of complainants in above entitled cause, to be used at the final hearing thereof, will be taken before George M. Shetter, esq., notary public, as special examiner, or other competent authority, at York, York County, Pennsylvania, commencing on Tuesday, June 18th, 1878, between the hours of 10 a. m. and 12 m., and continuing by adjournment from day to day, if necessary. You can attend and cross-examine if you so desire.

Very respectfully,

GEORGE H. CHRISTY,
For Complainants.

New York, June 7, 1878.

To defendants above named or John R. Bennett, their attorney.

Service accepted by copy, June 7, 1878.

JOHN R. BENNETT,
For George Harding, of Counsel for Defendants.

Depositions of witnesses on behalf of the complainants, taken pursuant to the notice hereunto annexed, commencing at the time and place therein named, at my office, and before me, George M. Shetter, notary public, as special examiner, and continued by adjournment, as noted.

Present, George H. Christy, for complainants, and R. Hoffheins, one of the complainants. No one appeared for defendants.

356 JUNE 18, 1878—quarter before 12 o'clock a. m.

HENRY W. EISENHART, being produced and sworn, deposeth and says:

Int. 1. What is your name, residence, occupation, and age?

Ans. My name is Henry W. Eisenhart. I reside in the borough of York, Pennsylvania. I am a carpenter by occupation. I am thirty-eight years of age.

Int. 2. Where, for whom, and in what business were you engaged in 1864?

Ans. At East Berlin, Adams County, Pennsylvania, for Joseph H. Shireman, manufacturing agricultural implements.

Int. 3. Do you remember of a Hoffheins' self-rake reaping machine which Shireman sold to Peter Shellenberger that year?

Ans. I do.

Int. 4. Please state what you know about the history of that machine.

Ans. I know that we had a sample machine to manufacture by. The machine, when it came there, had only one cutting-bar, I think, and it seems the machine didn't cut wide enough for Shellenberger; then we made him a new platform, and I think a new rake-post and rake-arms, attached them to the main running part of the machine. That machine was sold to Shellenberger.

Int. 5. Did you learn at that time where the machine came from?

Ans. Shireman told me at that time that the machine came from the Maryland Institute, at Baltimore.

Int. 6. What was done with the platform, rake-post, and rakes which you took off the machine?

Ans. As near as I can recollect, they were put on to another machine that was built at the shop that season. I think the machine was sold to George Baum, but am not sure whether it was that season or the next spring.

Int. 7. When the machine came to Shireman's shop, did it have any driver's seat or seats on it?

Ans. It had one on, I am certain.

357 Int. 8. Do you remember of any trial made in the shop to see if a driver could sit on that seat without being struck by the rakes while they were revolving; I mean the machine as it came to the shop?

Ans. I do; the machine was set up in the shop, in ordinary working condition, and some of the hands, if not all of them, sat on the seat while the rakes were being turned, and the rakes did not strike any of them; a man could sit on them without being struck.

Int. 9. Describe the seat and its attachment to the machine?

Ans. It was a cast-iron seat, attached to the main frame by a steel spring; the back end of the spring was attached to the main frame near the axle, between the driving wheels, and extended upward and forward, so that when a man was sitting on the seat his feet would come in front of the main frame.

Int. 10. Look at the seat attached to Complainants' Exhibit No. 63, and state about how nearly that represents the seat, spring, and connection, as the same were on the machine we have been talking about.

Ans. It is about the same, except that I think the seat was a little nearer right over the bevel wheel; I think it was right over the bevel wheel, and I do not remember whether the connection was forward of the main axle or back of it.

Int. 11. Do you remember whether you made the rake-post as Shellenberger got it, of the same length as the one that was on the sample machine, or different; and how different?

Ans. I made it different—I made it shorter; I should say between five and a half and six and a half inches shorter—I cannot say exactly.

Int. 12. You did this yourself, did you?

Ans. Yes, sir.

HENRY W. EISENHART.

Sworn to and subscribed before me June 18, 1878.

GEORGE M. SHETTER,
N. P., as Special Examiner.

358 PETER SHELLENBERGER, a witness on the part of complainants, being duly sworn, deposes and says, in answer to interrogatories propounded by Mr. Christy, as follows:

Int. 1. Are you the same Peter Shellenberger who gave testimony in Philadelphia last fall, about a Hoffheins harvesting machine (Exhibit A), bought of J. H. Shireman in 1864?

Ans. I am.

Int. 2. Were any alterations or changes made in the machine before you took it?

Ans. Yes; he put a new cutter-bar, a new platform, new rakes, and a new rake-post.

Int. 3. Why did you have these parts made new?

Ans. I had contracted with Shireman for a reaper, but he was too busy to make it, and wanted to sell me this one; I replied that I would take it if he would put on a longer cutter-bar; to this he replied that he would then be compelled to put on a new platform, new rake-post, and new rakes also. He then agreed to make these alterations, and did so, and I took the machine.

Int. 4. Did you see the old rake-post and platform afterwards; and, if so, where?

Ans. I saw them at Shireman's shop when I took my machine away, and I saw them there after I had taken my machine away.

Int. 5. At the time you bought this machine, or was talking with Shireman about buying it, did he tell you where the original machine came from?

Ans. He told me he got the machine from Hoffheins for a pattern to make machines by, and that Hoffheins had had this machine on exhibition at the Baltimore fair.

Int. 6. Do you know what became of the first platform, rake-post, and rakes which belonged to that machine, and which Shireman took off?

Ans. I don't know, except that some one told me that George Baum had got them with another machine; I heard it not quite a year ago; don't recollect who told me.

PETER SHELLENBERGER.

359 Sworn to and subscribed before me, June 18, A. D. 1878.

GEORGE M. SHETTER,
N. P. and Special Examiner.

ROBERT NAYLOR, a witness on the part of complainants, being duly sworn, deposes and says, in answer to interrogatories propounded by Mr. CHRISTY, as follows:

Int. 1. Please state your name, age, residence, and occupation.

Ans. Robert Naylor; aged forty-four, lacking one day; live in Dover Township, York County, Pennsylvania; am store-keeper and keep a hotel.

Int. 2. Where and for whom were you working in the harvest of 1861?

Ans. For Israel Heilman, on his farm in Dover Township, in York County.

Int. 3. Did he have a reaping machine in use on his farm that harvest, and if so, what kind of a machine was it?

Ans. He did; it was one of Hoffheins' self-rakers.

Int. 4. Did you have anything to do with running that machine as a self-raker reaper, and if so, what?

Ans. I drove the horses—two horses.

Int. 5. Where did you sit when driving?

Ans. In the seat.

Int. 6. Whereabouts was the seat?

Ans. In front of the reaper—on the front outer corner.

Int. 7. While sitting on that seat, so located, and while the machine was at work cutting grain, about how near did the rakes or beaters come to your head?

Ans. I can't tell, but they didn't touch me; I am five feet six inches tall; I held the check reins and drove.

Int. 8. Was the ground smooth or rough where you were working?

Ans. It was pretty rough; it was washed in gulleys.

Int. 9. What time in 1861 was it that you drove on this machine, and how do you fix the date?

Ans. It was July 5th, 1861, and I fix the date by my book in
360 which I put down my day's work; it was the first day I worked for Heilman that harvest, and I have the book here with me.

The entry reads as follows:

"July 5, 1861. Robert Naylor, work for Israel Heilman. July 5, 1 day for."

Int. 10. How much cutting was done with the machine that day, while you were riding on the seat and driving?

Ans. Not much—may be ten or twenty shocks; I can't tell exactly—we just tried it; it was in the evening.

Int. 11. How did the machine work?

Ans. It worked good and nice until it broke; I throwed it off nice.

Int. 12. What part of it broke?

Ans. Some place about the rakes; I don't remember just what part.

Int. 13. What kind of grain was it you were working in?

Ans. Wheat.

ROBERT NAYLOR.

Sworn to and subscribed before me, this June 18th, A. D. 1878.

GEORGE M. SHETTER,
Notary Public, as Special Examiner.

ISRAEL HEILMAN, a witness on behalf of the complainants, being sworn, deposes and says, in answer to interrogatories propounded by Mr. CHRISTY, as follows:

Int. 1. What is your name, age, residence, and occupation?

Ans. Israel Heilman; between 53 and 54 years of age; reside in Dover Township, York County, Pennsylvania; am a farmer by occupation.

Int. 2. Do you know Reuben Hoffheins, and if so, how long have you known him?

Ans. Yes; I have known him for more than twenty years.

Int. 3. Do you remember of buying a self-raking reaper from
361 him along about 1861, and if so, how nearly can you fix the time?

Ans. I bought one from him, but can't remember, certainly, when it was, but I remember it was the year he first brought out his self-rake machine; it was about two miles from his shop to my farm, as near as I can tell.

Int. 4. What kind of a machine was it you bought from him?

Ans. It was a self-raking machine; it had two drive-wheels, a wooden frame, a stiff tongue; it was a hinged cutter-bar and platform, with rakes, and a rake-post on the front corner of the platform next to the main frame.

Int. 5. Where did the rakes deposit the grain?

Ans. Behind the machine, out of the way of the horses, when they passed around again.

Int. 6. Was there any driver's seat on that machine?

Ans. Yes.

Int. 7. Whereabouts was it?

Ans. On the front outer corner of the main frame.

Int. 8. How much did you use that machine as a self-raking reaper the year you got it?

Ans. I cut three or four acres of wheat with it. I started the machine in the evening and cut two or three rounds with it, then the next morning we finished that piece, and commenced another piece in the same field, and run it until it broke.

Int. 9. What part of the machine broke?

Ans. The casting on top of the rake-post.

Int. 10. What did you then do with the machine?

Ans. Took off the post and rakes and raked by hand.

Int. 11. Did Mr. Hoffheins afterwards furnish you a new rake-post and rakes for that machine?

Ans. Yes.

Int. 12. Before the machine broke, and while you were using it for cutting grain, did any one sit on the driver's seat and drive?

Ans. Yes.

Int. 13. Who was it?

362 Ans. Robert Naylor.

Int. 14. Do you remember how near the rakes and beaters came to his head?

Ans. No; they went clean over his head; there was plenty of room.

Int. 15. What kind of ground was it on which you first used the machine?

Ans. It was on a side hill, a little uneven, and washed in small gutters.

Int. 16. Look at the model marked Complainants' Exhibit No. 61, and state how that compares with the machine you bought from Hoffheins as above stated, in the features you have mentioned.

Ans. As near as I can tell, this is the model of that machine.

ISRAEL HEILMAN.

Sworn and subscribed before me, June 18, A. D. 1878.

GEORGE M. SHETTER,
N. P. and Special Examiner.

Adjourned until to-morrow, June 19th, 9 a. m., at same place.

GEORGE M. SHETTER,
N. P. and Special Examiner.

June 19th, 1878, met pursuant to adjournment; present as before. Taking of testimony resumed.

JACOB F. GLATFELTER, a witness on behalf of complainant, being

duly sworn, deposes and says, in answer to interrogatories propounded to him by Mr. CHRISTY, as follows:

Int. 1. State your name, age, residence, and occupation.

Ans. Jacob F. Glatfelter; am forty-two years of age; reside in West Manchester Township, York County, Pennsylvania; am by occupation a farmer, and have been for nineteen years.

Int. 2. Did you ever buy a self-rake reaper of Reuben Hoffheins; and if so, when?

Ans. Yes, I did; in 1861.

363 Int. 3. How do you fix the date?

Ans. I fix the date by a hand that worked for me the year I bought the machine; his name was John Shire; he worked for me that summer, then went in the army and died; I have my old account book here, showing the days he worked for me, the first date being June 29, 1861, and the last date being July 19, 1861; I paid him off in full July 20, 1861.

Int. 4. Describe the general features of that machine as it was when you bought it.

Ans. It had a wooden frame, stiff tongue, two drive-wheels, two seats, a grain platform attached by a joint to a bar which was connected with the frame; the inner end of the platform was hung from the end back of the main frame by and arm and chain; the machine had a rake-post on the front inner corner of the platform, and there were revolving rakes on the top of the rake-post.

Int. 5. Look at the model, Complainants' Exhibit No. 61, and state how it compares with the old machine which you got of Hoffheins in 1861.

Ans. It is the same make.

Int. 6. How much did you use that machine as a self-raker that year in cutting grain?

Ans. Very little; we didn't get quite one round on an eight-acre field before it broke.

Int. 7. What part of it broke?

Ans. The shaft that drives the rake; it broke at the joint at the back end; it did good work before it broke.

Int. 8. What kind of a bargain did you make with Mr. Hoffheins when you bought it?

Ans. Our bargain was that if the machine would work I would keep it and give him a hundred and fifty-five dollars; if it didn't work, I wouldn't keep it. I kept it after it broke and raked off by hand that season, and gave him a hundred and twenty dollars for it.

Int. 9. Did Mr. Hoffheins afterwards make a self-raker of it again; and, if so, how and when?

364 Ans. Yes, sir, he did in 1863. I took the machine back to his shop, and he put on a new rake-post and rakes, and a new platform, and he geared it on the inside. The new rake-post was shorter than the old one was.

Int. 10. On what part of the machine were the seats when you first got the machine?

Ans. The driver's seat was on the outer front corner of the main frame, and the other was about the middle of the machine, back of the main axle.

Int. 11. When you first tried the machine, did the driver sit on the front seat?

Ans. No, sir; we had four horses, and the driver sat on the saddle-horse; that was the usual way in those times.

Int. 12. Do you remember whether there was room enough for the driver to sit on the front seat without being struck by the rakes or the beaters, as you first tried the machine?

Ans. Yes, sir; he could sit there handy; if I aint mistaken, I think Mr. Hoffheins sat on that seat while we were making the first round; he was watching the machine work.

Int. 13. After the new rake-post was put on in 1863, how did the machine work as a self-raker?

Ans. The machine worked well; I cut all my grain with it from that time on until 1876.

JACOB F. GLATFELTER.

Sworn and subscribed before me June 19, A. D. 1878.

GEORGE M. SHETTER,
N. P. and Special Examiner.

MICHAEL LINK, a witness on behalf of the complainants, being duly affirmed, deposes and says, in answer to interrogatories propounded to him by Mr. CHRISTY, as follows:

Int. 1. What is your name, age, residence, and occupation?

Ans. Michael Link; aged forty-seven years; reside in Dover Borough, York County, Pennsylvania; am a coachmaker by occupation.

365 Int. 2. How long have you worked at coachmaking?

Ans. Eleven years.

Int. 3. What was your business before that?

Ans. My business before that was carpentering.

Int. 4. Did you ever work for Reuben Hoffheins; and, if so, when and where, and doing what?

Ans. Yes; in 1860; from the commencement of hay making until the harvest was over, in Dover Borough, at his shop; worked at the wood-work on machines he was building.

Int. 5. How do you know that it was in 1860, during harvest time, that you did this?

Ans. I take it from the time I moved to Dover, in 1859; the first year I was there I worked at carpentering, except during harvest, when my hands all went out to work at harvesting, and I went at harvesting too, that year; the next year my hands all went out harvesting again, and Hoffheins was very busy and asked me if I could help him out, and I said I would; that I would rather work in the shop than in the harvest field, and I did so.

Int. 6. Did you learn anything, at or about that time, of his working on a self-rake reaper; and if so, what did you learn?

Ans. Soon after I quit working for him, say about August following, I saw some drawings that were made with a pencil on a board; I asked Hoffheins what it was to be, and he told me it was to be a self-rake for his reaper; this was at the shop one day when I was in there; the rake-post was drawn on the board and the rake-arms too; there was some gearing on too, but not just as it was made afterwards; the drawings showed that the rakes were to revolve.

Int. 7. Did you afterwards see such rake-post and rakes in a finished machine; and, if so, when and where?

Ans. I did; I seen them at his shop, standing, either in the last part of March or the beginning of April, 1861; it was the spring after I worked for him.

Int. 8. What was the machine like, as you saw it then?

Ans. It was a two-wheeled machine, with a hinged platform,

366 a rake-post on the front corner of the platform next to the machine; it had revolving rakes and beaters on top of the rake-post, which revolved around over the machine into the grain, and along the platform.

Int. 9. Did you see such a machine tried afterwards; and, if so, when and where?

Ans. Yes; I did; some time in June, 1861; it was in the rye before it was ripe; that I know, that it wasn't ripe; it was on Wm. Lenhart's farm, near Dover.

Int. 10. Did you ever see one of these machines tried afterwards; and, if so, state the circumstances?

Ans. Yes; me and Mr. Hoffheins went to Israel Heilman's and set a machine up in the grain; that was the same year and the same kind of a machine, and the driver was sitting on the seat on the machine and driving the horses while it was cutting the grain; I stayed while they drove around the field a few times; the machine worked well while I stayed there.

Int. 11. Do you remember how, in those machines, the platform and cutting apparatus was connected with the main frame?

Ans. Yes; the platform was jointed to the drag-bar, and lifted up by a chain on the rear cross-bar of the main frame, fastened to a hook at the upper end of a bar that stuck out from the rake-post.

Int. 12. Look at the model now shown you, marked Complainants' Exhibit No. 61, and state how that compares with the Hoffheins machine which you say you saw in 1861.

Ans. It compares with the machine that I saw, as near as I can tell; it is the same, as near as I can tell.

MICHAEL LINK.

Affirmed to and subscribed before me June 19, A. D. 1878.

GEORGE M. SHETTER,
N. P. and Special Examiner.

JOHN FLORY, a witness on behalf of the complainants, being duly affirmed, deposes and says, in answer to interrogatories propounded to him by Mr. CHRISTY, as follows:

367 Int. 1. What is your name, age, residence, and occupation?

Ans. John Flory; aged fifty-nine years; reside in Manchester Township, York County, Pennsylvania; am a farmer by occupation now; was formerly a miller.

Int. 2. Do you remember of having seen a self-rake reaping machine gotten up by Reuben Hoffheins several years ago, and if so, when, where, and how did you come to see it?

Ans. I do; I did see it in 1861, at Hoffheins' shop, in Dover; in 1860 I bought a hand-rake machine of Hoffheins or of his agent, Rutledge; used it one season for mowing grass and cutting grain; then in 1861, in beginning of March, I took the machine back to Hoffheins' shop in Dover, to get some fixtures done to the platform; then I saw part of his self-rake machine standing in the shop, not put together all—the post was on the platform, for putting the revolving rakes on, but as far as I can recollect, there was only one rake put on then. In 1861, in May, after I was done planting corn, I went and fetched my machine home again. When I was in the shop at that time I saw Hoffheins' machine standing in the shop, all ready for use.

Int. 3. Describe the general features of the machine, as you saw it in Hoffheins' shop in May.

Ans. It had two driving-wheels, a tongue on the main frame, driving seat on the main frame right in front of the outside wheel; the main frame was made of wood; it had a platform hitched to it—a cutter-bar and cutters, post attached on the platform, at the heel of the cutter-bar, for the rakes and beaters to revolve on; the platform and cutters were connected to the main frame by a drag-bar or slide, as we called it, and another bar that ran across under the rear of the main frame, and was hinged to the shoe; there was a bar that ran out from the rake-post, that was hung to the main frame by a hook and chain; that was used for lowering and raising the inner end of the cutting apparatus.

Int. 4. Look at the model now shown you, marked "Complainants' Exhibit No. 61," and state how that compares with the machine you saw in Hoffheins' shop, in May, 1861?

368 Ans. It compares the same as the machine I saw there, as near as I can tell.

Int. 5. What makes you sure that it was in 1861 that you saw the machine?

Ans. In 1860 Daniel Rutledge was agent for Hoffheins' hand-raking machine, and had some machines there near my mill, for peddling out and selling; then he was there at the mill pretty often in 1860, and his brother John was my miller at that time, and John got sick in September, 1860, and died the same month; I have in my book here the dates when he died and when he was buried; on the page containing John Rutledge's account, I entered the date when he died, September 27th, and the date when he was buried, September 29th; those entries are all made under the date of 1860, and were made at the time by myself; I remember that I bought the hand-rake machine of Daniel Rutledge, Hoffheins' agent, the fore part of that summer, 1860; he didn't keep his machines there the next year, and it was the next spring after I bought the machine that I took it back to Hoffheins' shop to have the platform fixed; and it was then that I first saw the parts of the self-rake machine.

Int. 6. How do you know that it was in March that you took the hand-rake machine back to Hoffheins' shop?

Ans. I know that it was in the spring, before our spring work commenced in the fields, because I had the most time then for doing such things; after corn-planting we hadn't so much work on hand and I then fetched the machine home again; that is my reason for fixing it in May.

JOHN FLORY,

Affirmed to and subscribed before me June 19th, A. D. 1878.

GEORGE M. SHETTER,
N. P. and Special Examiner.

DAVID E BELL, a witness on behalf of complainants, being duly affirmed, deposes and says, in answer to interrogatories propounded to him by Mr. Christy, as follows:

Int. 1. What is your name, age, residence, and occupation?

369 Ans. David E. Bell; aged twenty-six years; reside in Chatham, Chester County, Pennsylvania; I am a farmer by occupation.

Int. 2. How long have you lived in Chester County, and where did you live before that?

Ans. I have lived in Chester County since the twenty-third of March, 1877; before that at Pleasant Hill, New Castle County, Delaware; I lived with my father there, until his death in 1868, and worked on the farm until the twenty-third of March, 1877.

Int. 3. Was there a Hoffheins self-rake reaping machine in use at any time on that farm while you worked there, and if so, during what years?

Ans. Yes, from 1864 to 1870, both inclusive.

Int. 4. Describe the general features of that machine.

Ans. It was a two-wheeled machine with cog-gearing on the driving-wheels, had a wooden frame, stiff tongue, a quadrant-shaped platform, cutter-bar and cutters; the cutter-bar and cutters were on the left-hand side—it was a rear cut machine; the rake-post was on the heel of the cutter-bar; there were two revolving rakes and two revolving beaters mounted on top of the rake-post; the cutting apparatus and platform were connected to the main frame by a bar which ran forward to the front inner corner of the main frame, and there was another bar pivoted to the shoe; the other end was connected to the other side of the machine, nearer the rear, to a casting under the wood-work; an arm came out from the shoe at the bottom of the rake post—there was a chain on the end of the arm, which hooked on to a hook on the rear cross-bar of the main frame; the hook was between the wheels, but nearest the inner wheel.

Int. 5. Look at the model now shown you, marked "Complainants' Exhibit No. 64," and state how that compares, in construction, with the machine referred to—a seat with a U-spring being put on the front cross-bar of the main frame at the point marked "U."

Ans. It is a correct model of that machine, I would say, but I don't know whether it is made to a scale or not; the mower's seat is not on the model, nor the foot-step for the front seat.

370 Int. 6. As you used that machine for cutting grain, where did the driver usually sit?

Ans. On the front seat, except when we used three horses; then he generally sat on the saddle horse, but we usually run the machine with two horses.

Int. 7. Describe the front or driver's seat and spring, and state where it was placed on the machine, I mean for reaping.

Ans. It was an ordinary cast-iron seat on a U-spring, the exact height of which I don't remember, but think it was about six inches; the spring was fastened to the front cross-piece of the main frame, about where the letter "U" is on the model.

Int. 8. State who rode on this seat and drove the machine while it was being used in cutting grain on your father's farm—the old home farm.

Ans. Marion Eastburn, Jacob Moore (these two were hired men), my father, my sister and myself.

Int. 9. State where Eastburn and Moore are now living, if you know.

Ans. Eastburn lives in Mill Creek Hundred, in New Castle County, Delaware, and Moore near Wilmington, Delaware; Wilmington is Moore's post-office, and Pleasant Hill is Eastburn's post-office.

Int. 10. In thus using the machine, did you find there was room enough for an ordinary-sized man to sit on the front seat and drive while cutting grain, without being struck by the rakes or beaters?

Ans. Yes, I would say there was ample room for an ordinary-sized man; Eastburn and Moore were of the average height—if anything, a little more; my father was above the average height—he was six feet one inch.

Int. 11. About how much grain, on the average, did you cut with that machine each year?

Ans. About twenty acres or more.

Int. 12. What became of that machine?

Ans. We sold it in 1871 to a man named McCormick, living in that neighborhood; I saw the same machine to-day, at the old
371 barn on Mr. Hoffheins' farm, near York; there were a number of marks on the machine by which I could identify it.

Int. 13. How did the machine operate while you had it?

Ans. It done good work; I never saw a machine that would lay the gavels off as nice as this did.

DAVID E. BELL.

Affirmed to and subscribed before me June 19th, 1878.

GEORGE M. SHETTER,
N. P. and Special Examiner.

372 United States circuit court, northern district of Ohio.

R. HOFFHEINS ET AL. }
vs. } In chancery.
C. RUSSELL ET AL. }

Depositions of witnesses taken by consent, to be used at the final hearing of the above-entitled cause on part of complainants, the same being taken at Philadelphia, Pennsylvania, on the 13th day of July, 1878, at the office of George Harding, esq., before me, Thomas J. Hunt, notary public, as special examiner, under and pursuant to amendment to 67th rule in equity:

Present, George H. Christy, esq., for complainants; John R. Bennett, esq., for defendants:

SAMUEL LEONARD, a witness produced on the part of complainants, being first duly sworn, in answer to the interrogatories propounded to him by George H. Christy, deposes and says:

Int. 1. Please state your name, age, residence, and occupation.

Ans. My name is Samuel Leonard; my age is 65 years; my residence is in Knox County, East Tennessee; I am a farmer by occupation.

Int. 2. Do you know Reuben Hoffheins, of York, Pa.; if so, how long have you known him?

Ans. I do know him, and have known him since 1859.

Int. 3. Did you ever act as agent for him in selling mowing and reaping machines; and if so, when, and where did you then live?

Ans. I did; it was in 1860 and 1861; I then lived in Juniata County, Pennsylvania; Oakland Mills was my post-office; I lived in Fayette Township.

373 Int. 4. Look at the letters now shown you, marked Complainants' Letter Exhibit No. 1, (date, Jan. 23d, 1860); Complainants' Letter, Exhibit No. 2 (date, Feb. 9th, 1860); Complainants' Letter, Exhibit No. 3 (date, May 19, 1860); Complainants' Letter, Exhibit No. 4 (date, June 1, 1860); Complainants' Letter, Exhibit No. 5 (date, Dec. 1, 1860); Complainants' Letter, Exhibit No. 7 (date, Feb. 28, 1861); Complainants' Letter Exhibit, No. 8 (date, April 9, 1861); Complainants' Letter, Exhibit No. 10 (date, May 17, 1861); Complainants' Letter, Exhibit No. 11, (date, May 20, 1861); and Complainants' Letter, Exhibit No. 14 (date, June 14, 1861). State if you wrote these letters to Mr. Hoffheins as they are addressed, at or about the time they bear date.

Ans. I did, sir.

Int. 5. Did they constitute a part of your regular business correspondence with him?

Ans. Yes, sir; they did.

Int. 6. I notice in these letters frequent mention of a "raker," "self-raker," and a "self-rake," alluded to in some way in connection with Mr. Hoffheins. Please state what you referred to in those parts of those letters, by those terms.

(Objected to.)

Ans. Well, I meant that it was intended all for the self-rake, as it was my neglect in cutting it short sometimes in writing.

Int. 7. What, if anything, had Mr. Hoffheins to do with the "self-rake" you then and there referred to?

(Objected to.)

Ans. Well, now, I can hardly tell you that without going back; in 1859, either the latter part of September or the beginning of October, Mr. Hoffheins and I met in Philadelphia, where there were reapers exhibited at a fair, and he had on exhibition the Ball reaper, I think; I will not be certain whether it was the Ball reaper that he was exhibiting; it was the Ball reaper that he was concerned in for me to sell; I looked around and saw the different kinds; I wanted to get a reaper to sell with a self-rake on; he told me he was going to put one
374 on, and showed me how he would attach it that it wouldn't be the same as the Dorsey rake on the machine, as the Dorsey rake was attached to the Jersey Blue, and it wouldn't let a man ride on the machine to drive without hitting his head or knocking him off; he said that he was going to fix his behind on the cutting-bar and platform, as the Ball reaper cut behind; that no other reaper had a post on that place, or on the platform-bar—the cutting-bar; and that would raise the rake clear of the man that would sit on the machine to drive; there was where I agreed to sell reapers for him; there was more said; I asked him whether he wouldn't lose more than he would gain by putting it back there, but he said that he would gain.

Int. 8. What was it that he was going to put back there, as stated in your last answer?

(Objected to.)

Ans. It was the post, as I stated before, for the rakes to work on.

Int. 9. Was this what you referred to in your letters as the "self-rake?"

(Objected to.)

Ans. Yes, sir.

Int. 10. Did Mr. Hoffheins afterwards send you one of his self-rake machines; and if so, when was it?

Ans. Yes, sir; he sent me one to sell; I think it was some time in June, 1861; it was in the harvest of 1861; it might have been in the latter part of May, 1861.

Int. 11. Describe the general features of that machine which he sent to you.

Ans. There was first, of course, the two-wheeled reaper; the cutting-bar was attached to the drag-bar at the side and cut behind, with the rake-post on the corner or end of the cutting-bar; it was at what I would call the heel end or next to the machine; the post was nearly four feet high, I believe—three feet and a half, or over it; the rakes attached on top; there were two rakes and two beaters to bring in the grain; they had a peculiar motion to come up after the sheaf was delivered, to come up around to clear the driver that was sitting

375 on a seat on the machine, attached near the front of the machine, or about it. I can hardly tell you whether it was at the middle or the side any more, it has been so long; and it was a movable seat, that we could put it back on the machine for mowing. It combined a reaper and mowing machine. To hold up this platform, I recollect, behind, there was a short bar with chain to hook it up to the machine, so that you could hold it higher or lower, that ran to the post of the machine. The short iron bar was fastened to the rake-post and machine both.

Int. 12. Whereabouts did the rakes deliver the sheaf?

(Objected to.)

Ans. Well, they delivered it behind the machine, at the side of the platform, out of the way for driving along again.

Int. 13. Did the machine have a stiff tongue or a limber tongue?

(Objected to.)

Ans. A stiff tongue. It was what I would call a stiff tongue; it had no joint.

Int. 14. Look at the model now shown you, marked Complainants' Exhibit, No. 61, and state how that compares, in the features you have mentioned, with the machine sent to you by Hoffheins.

Ans. The machine sent to me was about the same as this model.

Int. 15. What did you do with the machine that he sent to you, and what became of it?

Ans. I took it to George McCulloch, put it up there and hitched two horses to it; we drove it around the barn-yard a few times. One of these segments that the rake-arms are attached to got fast, and in some way we broke it. That ended the raking part. I took the rake off then, and sold it without the self-rake. Some of the wheels were broken, and some of them were left at George McCulloch's, and some I took home. I took the post home, I recollect, and the iron that holds the rake up to the machine, and one or two of the rakes. I don't know what became of them or where they are.

Int. 16. Did anybody sit on the driver's seat and drive while you were running the machine around the yard?

(Objected to as leading.)

376 Ans. Yes, sir.

Int. 17. When you were talking with Mr. Hoffheins at the Philadelphia fair, in 1859, did he indicate to you in any way what kind of a machine he was going to put his self-rake onto?

(Objected to.)

Ans. He showed me on the Ball where he was going to put it, and I understood it to be on the Ball, as I was going to sell that for him.

Cross-examined by JOHN R. BENNETT, for defendants:

X-int. 18. Where was it in Philadelphia that you had this conversation with Mr. Hoffheins?

Ans. At the fair; I think it was the State fair then held.

X-int. 19. What part of Philadelphia was it held in?

Ans. I can't tell exactly; out west here.

X-int. 20. Are you positive it was in 1859?

Ans. Yes, sir.

X-int. 21. And also that it was a State fair?

Ans. I told you I was not certain; but, to the best of my knowledge, it was a State fair. I told you it was at a fair.

X-int. 22. Had you this conversation with Mr. Hoffheins at one time?

Ans. No, sir; we went there two or three days—different days—different times we met on the fair ground, or on the ground.

X-int. 23. And this conversation, which you have related, is what passed between you and Mr. Hoffheins during the several interviews?

Ans. Yes, at that time; in 1859.

X-int. 24. Was Mr. Hoffheins exhibiting a Ball machine at the fair?

Ans. Yes; I believe it was a Ball machine. I think that he was exhibiting it; at least I understood so.

X-int. 25. That was a rear-cut machine, was it?

Ans. Yes, sir; cut behind.

X-int. 26. Was there any self-raking machines there on exhibition?

377 Ans. Yes, sir.

X-int. 27. Whose make?

Ans. Dorsey, I think.

X-int. 28. It was attached to the Jersey machine, was it not?

Ans. The Jersey Blue.

X-int. 29. That was front-cut, was it not?

Ans. Yes, sir; I believe it was; I think so; I won't say.

X-int. 30. Mr. Hoffheins' idea was to get a rake that would not interfere with the Dorsey rake, was it not?

Ans. I can't tell you that.

X-int. 31. Didn't he say so?

Ans. He wanted to have one that he could put on—he showed me behind, here, so that it wouldn't interfere with the rider—that the man to drive could sit on the machine.

X-int. 32. He wanted to put it on a rear-cut machine, didn't he?

Ans. Yes, sir. This is what you call a rear-cut. (Referring to Exhibit Model No. 61.) It was a post attached in that manner as in that machine. It was so that the driver could sit on the machine.

X-int. 33. Did you understand that what he told you was an idea of his own?

Ans. Yes; that is what I understood. He told me that this attachment was his own. (Referring to model No. 61.) I don't know anything more about it.

X-int. 34. What attachment do you mean? Point to it.

Ans. This part (indicating rake-post and rakes), by which it was to have a motion, so that it should not go on to the driver.

X-int. 35. Did he show you on that old machine by pointing out where it was to go?

Ans. Yes, sir.

X-int. 36. Had that Ball machine at the fair a seat on?

Ans. Yes; but not fixed in that manner.

X-int. 37. Where was the seat?

Ans. To the best of my knowledge the seat was back here. (In-

378 dicating.) I think it was rather forward of the axle, perhaps a little, not much though. I can't tell you, exactly, yet I sold the machines, the same machines, afterwards.

X-int. 38. Did he tell you that he intended to adapt a rake to that machine so that it would not interfere with the driver occupying the seat in that position?

Ans. Yes, sir; that is what he told me.

X-int. 39. Was not that seat directly back of the axle?

Ans. I told you I couldn't tell you exactly. It was to balance the machine the way it was placed on.

X-int. 40. It was in the same place as all the seats were put on the Ball machines made at that time, was it not?

Ans. I think it was about in the same position that they were all made then.

X-int. 41. Was that a mower?

Ans. It was a combined machine. I don't know whether there was not two different seats, but it was so that they could rake off by hand behind. That was the way the seat was placed, I think, as near as I can tell.

X-int. 42. Didn't he say that he wanted to get up a rake that would not be the same as the Dorsey?

Ans. He said that he would get up one to work so that it would not run to come in contact with the driver, like Dorsey's. I asked him in the first place about that part of it. He said he would make a better one than that was; that is, in that way, placed behind.

X-int. 43. Did you ever see a Dorsey rake on a machine that had a seat on for reaping?

Ans. I saw the Dorsey rake on a machine. I saw a seat on the same machine for mowing, but he could not be on for sitting there to reap. They were a combined machine—one-wheeled machine.

X-int. 44. Did Mr. Hoffheins say to you where he proposed to locate the seat at that time?

Ans. He said he put it forward.

X-int. 45. Did he say he would leave the seat in the same position as it was in that machine?

379 Ans. No, sir; he didn't tell me that.

X-int. 46. Did he say anything about the seat?

Ans. He said it would have to be forward. That is all I remember.

X-int. 47. Wasn't that for mowing?

Ans. No, sir; it was not for mowing.

X-int. 48. Did he say it was not?

Ans. No; I don't know as he did particularly. I can't say that he said it, because we didn't talk about mowing.

X-int. 49. Are you positive that he told you that what he proposed to get up was an idea of his own?

Ans. He didn't tell me whether it was positively an idea of his own.

X-int. 50. Something that he himself proposed to do?

Ans. Yes, sir.

X-int. 51. Something that was not included in any patent?

Ans. That is what I understood him; that the post and the motion of the rake was of his own getting.

X-int. 52. And this was in the fall of 1859?

Ans. Yes, sir.

X-int. 53. Did he tell you that the man could not sit on the Jersey machine with the Dorsey rake without knocking him off?

Ans. I can't say positively whether he said so or not. I saw that myself. I understood a good deal of machinery at that time. I turned the rake and I saw that myself. It was impossible.

X-int. 54. Did this conversation take place where the Ball machine was, or while you were examining the Dorsey?

Ans. It was at the Ball machine, I believe, or most of it, though we had looked at the Dorsey, of course, too. We looked at all the machines.

X-int. 55. Did Mr. Hoffheins get on the seat and show you how the driver was to operate?

Ans. I don't know as he did. There was no self-rake on it.

X-int. 56. The main point, then, was to get a self-rake different from the Dorsey, wasn't it?

380 Ans. That is what I formed the idea from what he told me.

X-int. 57. At that time, did Mr. Hoffheins say anything to you about his ever having endeavored to construct such a rake—ever having made the attempt?

Ans. I don't know whether he ever said he had worked at it before that or not; I can't tell you about that.

X-int. 58. Did he say anything to you that led you to believe that?

Ans. The way he showed me, I believe so; yes. The way he showed me that he was going to put it on made me believe so.

X-int. 59. But you fully understood the whole thing at that time?

Ans. I understood the way that he was going to put it. I didn't know exactly the motion, only by him showing it in his own hand.

X-int. 60. Previous to your coming to Philadelphia, had you any acquaintance with Mr. Hoffheins?

Ans. No, sir.

X-int. 61. Was it the first time that you met him that he entered into this discussion about the rake?

Ans. Yes, sir.

X-int. 62. You were an entire stranger to him?

Ans. Yes, sir.

X-int. 63. Didn't you think it sort of queer that he should begin to tell you all his ideas in reference to the rakes, you being a stranger?

Ans. That was the general mode among the farmers and machinists to do so. I was in to get out a patent for a water-wheel at the time.

X-int. 64. Did you hear Mr. Hoffheins say anything about patenting this thing, or anything about a patent in connection with it, at that time?

Ans. I do not know as he told me about it at that time. He did afterwards.

(Latter part of answer objected to.)

381 I ought to explain something more particularly there, because I put a question to him: That if he would get such a thing up, whether it would ever pay him or be of any consequence—that is, whether it would amount to anything for him; and he said that if nothing else would, the post of the machine would certainly recompense him, because no other machine had it on; that he told me.

X-int. 65. His main point, then, was the post for supporting the rake on?

Ans. That is about the words, as near as I can tell; that if nothing else would pay, he considered the post would pay.

X-int. 66. Did he say how high he intended having that post? Did he tell you anything about the details of the machine other than you have stated?

Ans. I can't say that he did, at the time, tell me what the height was.

X-int. 67. What shape platform was attached to that Ball machine?

Ans. The same as this; a circular (referring to Exhibit Model No. 61).

X-int. 68. It was a hand-machine, was it not?

Ans. Yes, sir; to rake off.

X-int. 69. The driver sat behind to rake off?

Ans. He sat I can't tell you exactly where. It was about fixed so that it would balance the machine; that it would not tilt; that the truck would be light on the horses' necks; not too heavy; that was about it. I couldn't tell you exactly where that seat was placed, because

they all had the seat placed just the same as the common machine. They were common machines, most of them there.

X-int. 70. On that Ball machine wasn't there a place directly back of the axle for the driver's seat?

Ans. I won't say positively, I told you.

X-int. 71. Don't you know, of your own knowledge, that the seat would have to be placed back of the axle when mowing, in order to balance the machine properly?

382 Ans. I sold the machine, and there are some of them in use yet. I know there is one, at any rate. But I couldn't positively just place the seat, because I didn't pay so particular attention to it, but they were placed on so that they would near about balance the machine so that it would not be too heavy on the horses' necks. But it appears to me that it was a little perhaps forward for mowing.

X-int. 72. Had you ever acted as agent for any machines manufactured at that time?

Ans. I had before that.

X-int. 73. Who for?

Ans. I had sold for Hussey.

X-int. 74. You never knew anything of Mr. Hoffheins prior to that time?

Ans. No, sir; I hadn't any conversation with Mr. Hoffheins before 1859.

X-int. 75. When next did you see Mr. Hoffheins after you returned home from the fair?

Ans. I think it was in August, 1860; it was down at his place, to the best of my knowledge.

X-int. 76. Did Mr. Hoffheins inform you that he was engaged in the manufacturing business at that time?

Ans. I was at his shop when he was making them.

X-int. 77. I mean during the conversation that you had at the fair in Philadelphia in 1859?

Ans. I understood that he was making machines and going to make machines.

X-int. 78. After you returned from the fair, didn't Mr. Hoffheins write to you and ask you whether or not you would act as agent for him?

Ans. I don't know. I wrote to him. I can't say whether he wrote to me or not first, but I think I wrote to him about that, wanting to know whether he wanted me to dispose of them.

X-int. 79. Why did you write to him in reference to that?

Ans. I had a chance to sell other machines.

383 X-int. 80. Why did you not sell other machines?

Ans. I thought his were going to be the best.

X-int. 81. Had you ever seen one of them?

Ans. I saw one, this Ball machine, I understood to be the kind that he wanted me to sell, and the way he told me about the rake pleased me the best of any.

X-int. 82. Do you mean the Ball hand-rakers?

Ans. No, sir; I mean with a self-rake to be put on.

X-int. 83. Did you know at the time you wrote to him that he was building machines with self-rakes on?

Ans. That is what I understood him; that he was going to have them. That is the reason I wanted to get it.

X-int. 84. Then the first that passed between you in reference to an agency was your writing to him?

Ans. No, sir.

X-int. 85. When was it?

Ans. I told you here, in Philadelphia.

X-int. 86. State what took place.

Ans. I agreed with him that I would sell machines for him.

X-int. 87. Then he asked you?

Ans. That is what we talked. He said he would give me the chance to sell.

X-int. 88. To sell what?

Ans. To sell machines.

X-int. 89. What kind?

Ans. The Ball; he was going to put a self-rake on—showing me how.

X-int. 90. Did he tell you when he would have them done?

Ans. I understood him to have them done for the harvest of 1860.

X-int. 91. Did you then agree to act as agent for him?

Ans. Yes, sir.

X-int. 92. You were to sell nothing but self-rake machines for him?

Ans. No, sir; there was no such agreement that I was to sell nothing but self-rake.

384 X-int. 93. You were merely to act as agent—wasn't that it?

Ans. Agent to sell machines. I expected of course to sell the self-rake.

(Latter part of answer objected to.)

X-int. 94. When did Mr. Hoffheins send you the first machine of any kind of his make?

Ans. In the spring of 1860.

X-int. 95. What kind of machine was it?

Ans. A Ball machine.

X-int. 96. A hand-raker?

Ans. Yes, sir.

X-int. 97. How many did he send you?

Ans. I guess he sent me three that season, but I only sold two; I remember of selling the two for him only; I think there was one machine left over in the fall; perhaps I didn't receive it until after harvest; I wouldn't say positively about it; I sold two at any rate.

X-int. 98. Are you willing to swear that you ever heard anything from Mr. Hoffheins in reference to a sweep-rake of his own, prior to the spring of 1860?

Ans. Oh, yes; he explained that he was going to make a rake, as I told you, in 1859; he told me then that he was going to make one and put it on; I thought then, as I told you, by his talk, it would be ready for 1860; but he didn't have it ready for me.

X int. 99. Didn't you write Mr. Hoffheins in reference to certain machines that were being sold in that country with self-rake attachments, and if he wished to compete, he must attach a self-raker to his machine?

Ans. I told him that he must have the self-rake; yes, and I asked him whether he would put the Dorsey on or what other rake; I thought then that he was going to alter; if you wish me to tell you, I will tell you the whole thing, as to my idea.

X-int. 100. If he explained to you in 1859 about this rake, why did you ask him if he was going to put on the Dorsey, or what other rake?

Ans. As I told you, my idea was that he was going to put a
385 part of it his own plan, and take some other portion from some other fellow.

X-int. 101. From what other fellow?

Ans. Well, perhaps from the Dorsey; that is what I had an idea of; I told him at that time I thought the Dorsey rake was the nicest, only it didn't work to please me on the machine.

X-int. 102. What made you suppose that he was not going to attach a self-rake, such as he described to you in 1859?

Ans. I didn't suppose that he was not going to put it on.

X-int. 103. Why then did you ask?

Ans. I thought, as I told you, that perhaps he would take a part of the Dorsey claim and attach it to his.

X-int. 104. What part of the Dorsey?

Ans. Well, I thought perhaps he would take the rakes; that he may be hadn't got his rakes fixed to work as he told me, and I thought he would take the Dorsey; I wrote to him then to ascertain.

X-int. 105. What made you think so?

Ans. Because I had told him that I thought the Dorsey rake worked very pretty, only coming in contact wouldn't do.

X-int. 106. Did not he tell you, in reply to that, that he didn't dare to use the Dorsey?

Ans. Of course he daresn't use the Dorsey; I understood that myself; I know that he couldn't without buying the right, or part of the right.

X-int. 107. Therefore he would have to adopt something different from Dorsey?

Ans. He showed me something entirely different from Dorsey.

X-int. 108. So as not to interfere with Dorsey's rights?

Ans. That is what he showed me.

X-int. 109. That was his object, wasn't it?

Ans. I can't tell what his object was; he didn't tell me that part.

X-int. 110. Isn't that what you understood?

Ans. I understood entirely different from the Dorsey rake, the way he was fixing his—the way he showed me.

X-int. 111. From what he said to you, you understood that it was to avoid the Dorsey, did you not?

386 Ans. Well, I can't tell you that part—whether it was to avoid Dorsey or not—because it was a different form, the way he showed me, entirely; so that I can't tell you whether it was to avoid Dorsey or not; he didn't tell me that part.

X-int. 112. Don't you remember of writing to Mr. Hoffheins and asking him, after he informed you that he intended building machines with his self-rake on, whose patent it was?

Ans. Yes.

X-int. 113. Why did you do that?

Ans. I wanted to know whether he had got out a patent himself or not, or whether he was getting some other; I was anxious to know; my customers wanted to know.

X-int. 114. You say that you understood that it was an idea of his own—something new?

Ans. Yes, that is what he showed me it was to be.

X-int. 115. Why then did you ask whose patent it was?

Ans. He was detaining me so long over the time that I expected to have the rake.

X-int. 116. Was that any reason for asking him whose patent it was?

Ans. I thought it was; it was my way of doing business then, at any rate.

X-int. 117. Didn't you know it was his own idea?

Ans. He told me so then, but I didn't know whether he had got it

fixed or was getting some other, or what he was doing; he detained me, and I tried to hurry him up.

X-int. 118. If you knew that that was his own idea, as described to you in 1859, why was it that you asked whose patent it was?

Ans. I told you I didn't know, only he showed me that was the way he was going to fix it; he didn't tell me whether it was his own patent or whose.

X-int. 119. Then you didn't know at that time how he proposed to build his rake?

Ans. Yes, sir; he showed me how; I didn't know, of course;
387 he may have changed his mind; it is only the way he showed me is what I state.

X-int. 120. During the time you had this correspondence which you have identified here this morning did Mr. Hoffheins give you to understand that he proposed to build the rake the same as described to you in 1859?

Ans. He did when I was down there in '60 again.

X-int. 121. That was after these letters were written, wasn't it?

Ans. Part of those letters I wrote afterwards.

X-int. 122. When was it you were down?

Ans. I think it was in August, 1860. I recollect it was in August, 1860. I was on business then about a water-wheel, traveling.

X-int. 123. You remember distinctly talking with Mr. Hoffheins in 1859, in reference to the Dorsey rake?

Ans. Oh, yes; we talked about the Dorsey rake, then.

X-int. 124. Then you knew in 1860 that Hoffheins had seen the Dorsey rake and knew how it was constructed?

Ans. Yes, sir; I did.

X-int. 125. Do you remember asking Mr. Hoffheins in one of your letters whether he had ever seen the Dorsey rake?

Ans. I don't know; I might have asked him whether he ever saw it work; I sometimes cut the word short; but he saw it; we both saw it and looked at it in 1859; both of us examined it.

X-int. 126. Suppose on examination of one of the letters it appears that you inquired of Mr. Hoffheins, during the month of May, if he ever had looked at a Dorsey rake. How do you account for that fact?

Ans. My meaning when I wrote that was whether he ever saw it work; that is what I meant; I might tell you more about it; I was very interested in reaper business at that time, and a number of men around me who were neighbors where I lived wanted me to inquire; I had never seen the Dorsey rake work in grain; that is what I actually meant by asking the question of him.

388 X-int 127. You say you understood that Mr. Hoffheins proposed to adapt his rake to the Ball machine?

Ans. Yes, sir; that is what he showed me; I don't know whether his intention was as he showed me.

X-int. 128. Why, in your letter of June 1st, 1860, did you inquire of Mr. Hoffheins, "I want you to tell me when you make your self-raker, can you attach it to one of those reapers now made easy or not?"

Ans. That is what I wanted to know. There was other machines sold around there.

X-int. 129. Didn't he tell you that he proposed to adapt it to the Ball machine?

Ans. He showed me, at the time here, as I told you before; I don't know that I need mention that again. The Manny machine was sold there prior to that. The Hussey was sold and also different machines,

and the Wood self-raker was coming in that year, so the agent told me, and that he could attach the Wood self-raker to any machine for ten dollars. This is what I wrote and wanted to know—whether he could attach his to any machine—as I wanted to compete with other agents.

X-int. 130. Did you know, prior to going to Mr. Hoffheins' place in 1860, how he proposed to build his rake that he made mention of in the letters that he wrote to you?

Ans. I knew it, as I told you—the way he showed me here in Philadelphia.

X-int. 131. I have already asked you several times why it was that you asked Mr. Hoffheins, in several of your letters, "whose patent it was?" when you knew, as you have just stated, that he proposed to adapt it to the Ball machine, and that it was his own idea. Will you please answer that question?

Ans. I think I stated that before, did I not? I didn't know whether he had taken out a patent, or whether he was getting the patent from some other; that is, at that time.

X-int. 132. When you used the terms "raker," "self-raker," "hand-raker," and such like in your letters, do you now distinctly remember that wherever that occurs you referred to the self-raker?

389 Ans. I think I never wrote hand-raker, if I mistake not; I don't know that I did; I meant self-raker when I wrote raker or self-raker, because all common machines were with the hand-rake.

X-int. 133. Wouldn't you call those a raker?

Ans. Well, I didn't.

X-int. 134. You distinctly remember that now?

Ans. You couldn't rake—a common machine you had to have some kind of a rake or fork.

X-int. 135. Do you distinctly remember that?

Ans. Yes, sir; because we often took a fork and pushed it off; sometimes a rake.

X-int. 136. Wouldn't that be a raker?

Ans. Well, I don't know; we didn't call it that; it was only a hand machine.

X-int. 137. Are you willing to swear positively, after a lapse of almost twenty years, that wherever you used the term "raker" in those letters it applied to self-raker?

Ans. Wherever I used the term "self-rake" or "raker;" but wherever I use the term "hand-rake" it is different.

X-int. 138. You have told me that the first machines Mr. Hoffheins sent to you were hand-rakers?

Ans. Yes, sir.

X-int. 139. As all these letters here produced are dated prior to the date of your receiving your first self-rake machine, is it not likely that you referred to those hand-rakers when you used those expressions?

Ans. If I used "hand-rake;" but I don't think I ever wrote about a machine for a hand-rake; my meaning, and we all called them a machine to cut grain, either to rake off with a fork or by hand; I didn't call them a raker, nor a hand-raker, nor the term wasn't used where I was, as I know, by any person; raker and self-raker is what I termed both to be the one thing.

X-int. 140. Do you mean that you never had any correspondence with Mr. Hoffheins in reference to the hand-rakers?

Ans. I don't recollect that I had. I don't recollect that I wrote about the hand-rakers.

390 X-int. 141. You never wrote to him whether you sold——

Ans. (Interrupting.) I might have wrote to him that I sold the hand-rakers. I might, but I wouldn't say positively now. When I sold the machines I wrote to him that I sold them.

X-int. 142. How, then, do you know that those letters didn't refer to those machines?

Ans. Those machines that I sold had no self-rake on.

X-int. 143. My question is, how do you know that where you used the term other than self-rakers that that didn't apply to those hand-rakes?

Ans. I told you before when I used the terms "raker" or "self-raker" I meant that was one thing; but if I wrote "hand-raker" I meant then to rake off by hand or fork.

X-int. 144. What term, then, did you use whenever you referred to what is known as the common hand-raker?

Ans. I don't know as I referred to any term particularly at all. I don't know that I did at all, only for a machine.

X-int. 145. How would they know whether you wanted the combined machine or a mower?

Ans. I wrote for a combined machine; or if I wanted a mower and a reaper separate I wrote for two separate machines.

X-int. 146. Then you would say a combined machine or mower?

Ans. Yes, sir; a combined machine meant two combined.

X-int. 147. Have you any of the old circulars that Mr. Hoffheins sent to you in the spring of 1860?

Ans. I can't say that I have any more. There may be some left in Juniata County, Pa., but I think not. I think my papers are all destroyed. I moved to Tennessee December coming will be four years.

X-int. 148. Wherever you used the term "reaper" in those letters, to what did you refer?

Ans. I referred to machines to cut grain.

X-int. 149. Self-rakers or hand-rakers?

Ans. If I wrote for a reaper only, it meant, of course, for a reaper singly, unless I mentioned a combined machine.

391 X-int. 150. What do you mean by a reaper singly?

Ans. To cut grain only.

X-int. 151. A hand-raker or a self-raker?

Ans. I meant a hand-raker.

X-int. 152. If, on examining of your letters, it should be found that on May 19th, 1861, you inquired of Mr. Hoffheins, "Now, I want you to tell me whose patent your rake is, and how you are succeeding with it," how would you account for that?

Ans. I think I asked him that question may be perhaps more than once; I wanted to know whether he was going on his own head, or whether he was going to get some one else and change it.

X-int. 153. You have already said several times that he told you how he was to make the rake?

Ans. Yes, sir.

X-int. 154. How, then, do you account for the fact of making that inquiry?

Ans. He was delaying, and I wanted to know whether he was getting a part from some other one; I think I told you before that that was my idea that I formed; he was delaying, and it was whether he was going to get a portion from some other person.

X-int. 155. Give the exact date that you received a machine with the self-raker from Mr. Hoffheins?

Ans. I couldn't exactly state; to the best of my knowledge, it was the latter part of May, or in June, 1861—with the self-raker.

X-int. 156. Do you think it was as late as the middle of June?

Ans. I won't say positively; but it was the latter part of May or in June.

X-int. 157. How did you get it?

Ans. I got it by railroad; that is, from the station; I had to haul it.

X-int. 158. Did you set it up yourself?

Ans. Yes, sir; I set it up partly. He sent an agent there to help me get it fixed right; I put it part of the way together.

X-int. 159. You set it up in the yard, you say?

Ans. Yes, sir.

392 X-int. 160. Did you run it around the yard?

Ans. Yes, sir; the barn-yard.

X-int. 161. With horses attached?

Ans. Oh, yes.

X-int. 162. Two horses?

Ans. Two horses.

X-int. 163. Who put on the rake part of the machine?

Ans. I think it was Mr. Fink helped me to put it on; Fink, I believe, was his name.

X-int. 164. Did you have any trouble in getting it on?

Ans. Well, I couldn't say that we had much; no, sir.

X-int. 165. Did you put the seat on?

Ans. Oh, yes.

X-int. 166. How many seats accompanied that machine?

Ans. Only one.

X-int. 167. Where did you put it?

Ans. Put it in front, as near as I can tell you?

X-int. 168. Whereabouts in front?

Ans. I can't tell you whether it was there (indicating the outer front corner on Model No. 61), or a little bit in; I couldn't say, but I think, to the best of my knowledge, it came just in contact with the wheel; I wouldn't say positively any more; it was about that part.

X-int. 169. Was there a place for it back of the axle?

Ans. I don't know of any; there was a place that I could put a seat on to mow.

X-int. 170. Where was that place?

Ans. That was further back, behind.

X-int. 171. Where was it?

Ans. It was somewhere back about the axle, or rather behind it perhaps, a little; I couldn't tell it exactly now?

X-int. 172. Did you put the seat there when you first put up the machine?

Ans. No, sir; we put it up on purpose for the self-rake.

X-int. 173. Did any one tell you to put it up there?

393 Ans. Well, I don't know that they did; I wanted it there.

X-int. 174. Why was it that you didn't want it back of the axle?

Ans. It was not made for that calculation.

X-int. 175. How do you know it was not?

Ans. I got it for a self-rake, and there was the place to put it.

X-int. 176. Why couldn't it have been back of the axle?

Ans. It didn't suit for the driver to ride on.

X-int. 177. In what way didn't it suit?

Ans. For the rakes hitting, and it was the purpose for the rakes to clear the driver in cutting grain.

X-int. 178. Then the reason you didn't put it back of the axle was that it would have hit the driver?

Ans. Well, I don't know whether it would, but I think it would hit the driver. That is what my idea is when the rakes were on. You put it back, of course, for mowing.

X-int. 179. And you never had the seat back of the axle for the driver when the rakes were in operation, had you?

Ans. No, sir.

X-int. 180. Was there not a place on the machine running out from the side of the wheel, and was not the seat placed there?

Ans. I don't remember as there was; it appears to me not; I cannot remember that there was any place running outside.

X-int. 181. When the driver sat on the seat and the rakes were in operation the driver was not within the circumference of the rakes, was he?

Ans. The rakes passed over the driver.

X-int. 182. Over his head entirely?

Ans. Yes, sir; cleared him.

X-int. 183. How much clear space was there between the head of the driver and the rakes?

Ans. That, I believe, I couldn't tell you?

X-int. 184. As much as a foot.

Ans. I expect there was, fully.

X-int. 185. Do you think there was two feet?

394 Ans. Well, I couldn't say, indeed; I know that it was just so that it cleared; that was all we cared about, so that it did not come in contact with any driver.

X-int. 186. Is it your recollection that it was as much as two feet?

Ans. I couldn't say, indeed; I wouldn't say how much.

X-int. 187. Was that a level barn-yard that you drove the machine around?

Ans. Yes, sir; pretty level.

X-int. 188. I understand you that one of the segments of the rake broke?

Ans. Yes, sir; one of the segments did.

X-int. 189. While you were driving the machine around the barn-yard?

Ans. Yes, sir; it got fast and broke.

X-int. 190. Was the driver sitting on the seat when the rake broke?

Ans. Yes, sir.

X-int. 191. Did it strike the driver when it broke?

Ans. I don't know that it did; I believe it dropped down behind him.

X-int. 192. Do you think it possible for a man to have sat upon that seat when the rakes were in operation, and the same broke, without injuring the driver?

Ans. Oh, yes.

X-int. 193. You have no doubt of that?

Ans. I have no doubt of it, because it didn't hit him at all when it broke; it came down; one of those things broke and just fell down; these cogs just broke here, and it wouldn't run; it broke and catched fast and wouldn't run; that is about the way it did; it couldn't fall to hurt any one, because it just broke the cogs on top of the rake-post, and it wouldn't run.

X-int. 194. Did it break entirely off?

Ans. It broke the cogs away, and they wouldn't run; in fact, the driver did drive a little more and broke more of them, and then we quit it.

395 X-int. 195. Did the arm that broke fall down or retain its position?

Ans. It wouldn't work at all; you couldn't make it run; it just catched fast.

X-int. 196. You said a while ago it dropped down.

Ans. Yes, sir; it just dropped; we couldn't make it rise at all; it just went down.

X-int. 197. Then you took the rake off entirely?

Ans. Then we took the rake off entirely; I sold the machine.

X-int. 198. Who witnessed the operation in the barn-yard?

Ans. It would be very hard for me to tell you that; Michael Hoffman was one, and George McCulloch was one, the hired man was another; there were five or six; I couldn't tell you all of them; it would be out of the question; Mr. Fink was present with myself.

X-int. 199. Who rode on the truck?

Ans. I have been studying that myself since I have been here, thinking that the question would be asked me, but I believe I can't tell you; it might have been myself; I can't recollect whether it was myself or whether it was McCulloch's hired man; it might have been myself that was on it, for I was in the habit then of riding, but I can't say.

X-int. 200. How many times did you run it around the yard?

Ans. That would be a hard question for me to tell you; we run it around three or four or five times, thinking to wear it a little, to make it run smooth and nice.

X-int. 201. Did you get any other self-rakers that year?

Ans. No, sir.

X-int. 202. That was the only one?

Ans. That was the only one.

X-int. 203. The top of the rake-post was on about a level with the top of the wheel, was it not?

Ans. No, sir; it was higher.

X-int. 204. How much higher?

Ans. I can't tell you; as near as I can tell, I told you the height
396 of the post—somewhere between three and a half and four feet—and then it was owing to the way you hooked it up behind—to raise—to cut, throwing it up high or low.

X-int. 205. You could leave it down so that it would not be more than three feet, couldn't you?

Ans. It would be the whole height of the post, but you could leave it down to come near to the wheel or raise it above the wheel considerably more by cutting high or low.

X-int. 206. Have you testified before for Mr. Hoffheins in reference to this rake?

Ans. No, sir.

X-int. 207. And all you have been testifying here to-day you distinctly recollect from memory?

Ans. Well, my memory was jogged before, some years ago; I had those letters in my possession; he wrote to me and asked me then whether I knew, and I told him as near as I could then; that renewed my memory; that was six or eight years ago.

X-int. 208. Have you that letter that he wrote you at that time?

Ans. No, sir.

X-int. 209. Have you at home?

Ans. No, sir.

X-int. 210. Have you any letters other than those here?

Ans. No, sir; those are the only letters that I could find at the time I sent them to him.

X-int. 211. Did you send him any circulars, pamphlets, or anything of that kind?

Ans. No, sir.

X-int. 212. Do you think you could find any at home?

Ans. No, sir; I don't know, as I told you, when I went away from there, whether I had any more or not; I think they were all destroyed; I had given them out, nearly all of them, I reckon, before that; I distributed them through the county.

X-int. 213. Did Mr. Fink explain to you about the seat?

Ans. I don't know that he did anything at all, only he knew about putting it on; I knew about as well as he did; there was not much difference; the place was made for it to be put on.

397 X-int. 214. What place?

Ans. The place there to be screwed on to it.

X-int. 215. On the front cross-bar, do you mean, in front of the wheel?

Ans. In front, along; I can't tell you whether it was a little in front of the wheel or whether it was a little beside.

X-int. 216. If Mr. Fink didn't tell you how did you know that the seat was not to be back of the axle for the driver to sit during the operation of reaping?

Ans. I knew that, because Mr. Hoffheins had told me that there was where he was going to have it, here in Philadelphia; that he was going to place the seat in front.

X-int. 217. Did he tell you why he was not going to place the seat back of the axle?

Ans. On account of the rake, he said.

X-int. 218. On account of the rake interfering with the driver, was it not?

Ans. Yes, sir.

X-int. 219. Did you sell any of those machines for Mr. Hoffheins in 1862?

Ans. No, sir, I believe not; it was in 1860 and 1861.

X-int. 220. Then this one self-raker is the only one that you sold for him, or had anything to do with?

Ans. The only one that he sent to me. I quit then.

X-int. 221. Was Mr. Fink present during the time that you drove this machine around the barn-yard and the man sitting upon it?

Ans. Yes, sir.

X-int. 222. You think there is no doubt about that?

Ans. I am sure of that.

X-int. 223. The seat was about the same height as all seats on the Ball machine, was it?

Ans. I expect it was.

X-int. 224. Was that seat, as you used it in the barn-yard, on the main frame, or was it on a projection running out from the main frame?

398 Ans. I told you I couldn't tell you exactly the spot it was, but it was in front there. It may have been right in front of the wheel, or perhaps a little in; I couldn't tell you exactly.

X-int. 225. Was it a seat the same as shown on Model No. 61, or did it spring out from the front of the machine?

Ans. To the best of my recollection, or as near as I can tell you, it was in the manner shown in the Model No. 61.

X-int. 226. Do you know what has become of that machine?

Ans. I sold it.

X-int. 227. Have you ever seen it since that time?

Ans. Yes, sir.

X-int. 228. Where?

Ans. I saw it several times. I sold it within five miles of my house.

X-int. 229. When last did you see it?

Ans. I can't tell you how many years, eight or nine years, or seven or eight years ago.

X-int. 230. Do you now know where any portion of that-rake post, or the arms, or anything connected with it, is?

Ans. I know where they were left.

X-int. 231. Do you know where they are now?

Ans. No, sir; I couldn't tell you.

X-int. 232. Did you change the machine into a hand-raker after you dispensed with the self-rake?

Ans. Yes, sir; right away.

X-int. 233. Did you leave the seat in the same position it was in, or did you change it?

Ans. I changed the seat.

X-int. 234. Where did you put it?

Ans. Back, behind, so that we could rake off with the hand-rake.

X-int. 235. What was the length of the finger-bar in that machine?

Ans. I think it was only about five feet, or something like that, cutting grain; some of them cut six feet, and some of them five;
399 four feet and five in mowing and five in grain. I think it was only a five-foot one to cut grain.

X-int. 236. For mowing, the length of the cutter-bar was about the same as used in all of the Ball machines, wasn't it?

Ans. Yes, sir; I expect it was about the same as I sold all others there.

X-int. 237. Are you able to say, from your recollection of that machine, whether or not this Model 61 is about in the same proportion?

Ans. I would say, as near as can be; I can't see anything of an alteration; I don't see anything particular about it.

X-int. 238. The various parts seem to be in about the same proportion as in the large machine?

Ans. I think very near about the same.

X-int. 239. You are not positive, then, whether or not there was a projection running out from this front cross-piece on the main frame, and on which the seat rested?

Ans. I cannot say that there was at all; I think not, though.

X-int. 240. But such might have been the case?

Ans. Well, I think not; I think it would hardly be without my knowledge; I don't recollect it at all.

X-int. 241. Suppose such should prove to be the case, then you would have forgotten it, would you not?

Ans. I think I have not forgotten it.

X-int. 242. My question is, suppose it would be proved by Mr. Hoffheins or other witnesses who saw that machine, that the seat was placed upon a projection running out from the main frame, would you not then say that you had forgotten the circumstance?

Ans. Well, it seems to me that they didn't put it to run out.

X-int. 243. It was about the same, you think, as shown in this model?

Ans. I think so; that is my idea; I think the projection didn't go out.

X-int. 244. Did you pay special attention to the working of the machine at that time, to see just how the rake passed over the man as he sat on the machine?

400 Ans. Well, yes, sir; that was the main object.

X-int. 245. Do you think there was as much as two feet clear space there?

Ans. As I told you, I couldn't say; it would be owing to the height that he would hook up the chain attached to the arm projecting from the rake-post.

X-int. 246. You say that you paid special attention to how the rake passed over the driver?

Ans. Yes, sir.

X-int. 247. Do you remember whether or not the rake passed entirely over the head, or whether or not, as the driver sat upon the seat, the rake merely passed over the back of the seat?

Ans. No, sir; it passed over the driver's head. That I will say, to the best of my knowledge. It certainly did, clear over his head.

X-int. 248. Did you drive the machine around the yard at about the same rate as you would through the field?

Ans. Well, yes, sir; I would think about the same rate—at a reasonably good walk.

X-int. 249. And the rakes were in operation when the accident happened?

Ans. Yes, sir; we had the rakes in operation.

X-int. 250. They were going at full rate?

Ans. Yes, sir.

X-int. 251. Did the breakage occur suddenly?

Ans. Do you mean soon after we commenced?

X-int. 252. No, sir; I mean this: Did the breakage occur or accident happen very unexpectedly to you?

Ans. Yes, sir; of course we didn't look for it; it got fast.

X-int. 253. Did it stop the machine?

Ans. Yes, sir; it stopped it from running.

X-int. 254. Very quickly?

Ans. Well, yes; pretty quick. We tried to start it again and broke more of it, as I told you before.

X-int. 255. Did the arm drop down entirely on the ground?

401 Ans. No, sir; it didn't drop entirely on the ground.

X-int. 256. It just dropped partly down?

Ans. Yes, sir; it came down to its lowest position.

X-int. 257. Did it jerk the driver off?

Ans. No, sir.

X-int. 258. Nothing of that kind happened at all?

Ans. No, sir.

X-int. 259. And yet there was a sudden breakage?

Ans. Yes, sir; of course; this was but a trifling thing, however, to stop anything; we could have driven on and broken every one of those arms, if we had wanted to.

X-int. 260. How do you fix the time as 1861 when Mr. Hoffheins sent you the self-rake?

Ans. I fix that, because in 1859 I had seen him in Philadelphia here and talked with him, as I stated before; in 1860 I sold for him again, and in 1861 again, and he wrote, and I have the letters showing; I returned those letters to him that I got—all that I had—and I had destroyed a lot of them; they show that I had received them; well, I may be too fast; I had the railroad bill that I paid the freight; I destroyed my papers when I moved to Tennessee; I burned up a whole lot of such bills that I thought never would be of any use.

X-int. 261. My question is, what enables you now, at this time, to say that it was in 1861?

Ans. It was through that that I know of it.

X-int. 262. Might it not have been June, 1862?

Ans. No, sir; I didn't sell any for him in June, 1862.

X-int. 263. Have you any receipts or bills, or anything in connection with that machine, that you could produce to fix the time?

Ans. I have not them now, but I had.

X-int. 263. I have examined these letters, and I see no mention in any of them as to your having received that particular machine; so how do you fix the fact by those letters?

Ans. I don't know, indeed; I rather expect it is in some of the letters that I ordered the machine; I don't know whether it is in
402 any of these or not that he has, but I know that it was in 1861 positively, as I stated to you, because I had the bill when I paid the freight; George McCulloch bought the farm, too; I recollect that in 1861; it was close by me; this transaction happened close by my farm.

X-int. 264. How many machines did you sell for Mr. Hoffheins in 1860?

Ans. I have already told you that.

X-int. 265. How many did you sell in 1861?

Ans. I think two machines.

X-int. 266. And all the machines that you sold for him in 1860 and 1861 were hand-rakers, except this one particular machine?

Ans. That is the only one I got.

X-int. 267. That was June, 1861, you think?

Ans. Yes, sir; to the best of my recollection; I stated the time before.

X-int. 268. Do you recollect how that machine was driven—how the gear was operated? What drove the rakes?

Ans. It was driven by the wheels inside.

X-int. 269. Was the connection on the outside or the inside of the wheels; that is, between the two wheels or on the outside towards the cutter bar?

Ans. I think it was in the manner described in the Exhibit Model No. 61, as near as I can recollect.

X-int. 270. You think it was a stiff connection like Model 61?

Ans. It was driven by a screw in this manner (pointing to Model 61), and put together with a coupling, and run with a screw that way to turn it.

X-int. 271. Did Mr. Hoffheins send you any circulars of that machine with the self-rake on?

Ans. I don't know that he did; I think that he had none printed, if I recollect right; I wouldn't say positively, but I think, to the best of my knowledge, he had none, or sent me none.

403 Mr. CHRISTY:

X-int. 272. I think you said you never wrote about hand-rakers; do you mean that you didn't call them hand-rakers, but only called them machines?

Ans. That is the best of my recollection—that I did.

(Signed by consent of counsel.)

SAMUEL LEONARD.

Sworn before me this 13th day of July, A. D. 1878.

THOS. J. HUNT,
Notary Public.

404 United States circuit court, northern district of Ohio.

R. HOFFHEINS ET AL.
versus
C. RUSSELL ET AL. } In chancery.

Deposition of witnesses on behalf of complainants, taken by consent before me, George A. Heckert, notary public, as special examiner, at York, Pennsylvania, commencing on Tuesday, July 23, 1878, at 10 o'clock, a. m., and continued by adjournment as hereinafter noted; the same to be used at the final hearing of the said cause. Present, George H. Christy, esq., for complainants, and John R. Bennett, esq., for defendants.

JOHN R. BLACK, a witness produced on behalf of complainants, being first duly sworn, in answer to interrogatories propounded to him, deposes and says as follows:

Int. 1. Please state your name, age, residence, and occupation.

Ans. My name is John R. Black; am forty-five years of age; reside in Lancaster County, Pennsylvania, and am selling reaping machines.

Int. 2. How long have you been engaged in that business?

Ans. Twenty-three years.

Int. 3. During that time what opportunities have you had for familiarizing yourself with the construction and use in the field of the leading reaping machines in use in this country?

Ans. Very fair opportunities.

Int. 4. Have you, or not, made it part of your business to set up machines in the field and supervise their running, until their success was satisfactory?

405 Ans. I have; that is, the machines I was selling and handling at the time.

Int. 5. What experience have you had in the handling, selling, and using machines having a two-wheeled main frame, a stiff tongue, a quadrant-shaped platform suspended from the main frame inside the inner drive-wheel, and with a hinged or jointed cutting apparatus, and also with a rake-post mounted on the inner end of the cutting apparatus carrying sweep-rakes? And for this purpose you may consider Complainants' Exhibit No. 61 and Complainants' Exhibit Model of Defendants' Harvester, as examples of machines containing the features above named.

Ans. I have handled and sold that class of machines in all about six years; have handled quite a large number of them; have set up and run a large number of them—would say several hundreds of them; I can safely say that I have operated over a hundred of them.

Int. 6. About when did machines of this class come generally and extensively into public use?

(Objected to as immaterial and irrelevant.)

Ans. In 1867 and 1868.

Int. 7. Since that time how has the sale of reaping machines of that class compared in extent with other and differently made reaping machines?

(Same objection.)

Ans. A much larger number of that class of machines have been sold than of any other, so far as my knowledge goes.

Int. 8. Have you made it a part of your business to keep yourself posted as to the preference of the public in the matter of reaping machines and as to what machines were the leading machines in the trade in the country generally?

(Same objection.)

Ans. Yes.

Int. 9. How generally has this class of machines been adopted by manufacturers during the last ten years?

(Same objection.)

406 Ans. By a large majority.

Int. 10. What is the fact as to its having been the leading machine in the trade for several years back—I mean machines of the class already referred to?

(Same objection.)

Ans. It being a two-wheeled machine with a hinged bar——

(The question having been reread to the witness, he says:) It has been the leading machine.

Int. 11. Did the manufacture and sale of such machines commence in 1867, or were you aware of their having been made and sold somewhat extensively previous to that time?

(Same objection; also as leading.)

Ans. I was aware that they were manufactured and sold previous to that time.

Int. 12. Can you give any reliable estimate of the average number of machines of that class made and sold per year during the last ten years?

(Objected to as immaterial and irrelevant.)

Ans. To the best of my knowledge there has been several thousands sold each year.

Int. 14. What is the advantage in this class of machines of the hinged cutting apparatus?

(Same objection.)

Ans. Its adaptability to the unevenness of the surface of the ground.

Int. 15. How is it as to converting the machine into a mower?

(Same objection.)

Ans. A two-wheeled machine with a hinged bar makes the best mower.

Int. 16. In a mowing machine where does the cutter-bar have to run—on the ground, or hung up clear of the ground?

(Same objection.)

Ans. On the ground.

Int. 17. How is it in a reaper?

Ans. Suspended or carried off the ground.

407 Int. 18. What is the advantage in carrying the point of the suspension over to the inner edge of the inner drive-wheel, or beyond, towards the centre of the main frame?

(Same objection.)

Ans. It divides the weight more evenly on the truck.

Int. 19. Does it, or not, render the truck less liable to tilt, when running on uneven ground?

(Same objection—also leading.)

Ans. It does.

Int. 20. Does it, or not, lessen the liability of the rake post, or raking apparatus, to strike the inner wheel when running on uneven ground?

(Same objection.)

Ans. It does.

Int. 21. What is generally understood in the art as a hinged cutter bar?

(This and all preceding questions of a like character objected to, the witness not shown to be competent to testify as an expert.)

Ans. What I understand as a hinged cutter bar is a bar hinged at the heel, where the pitman is connected with the knife.

Int. 22. What is the advantage, in a machine of the class above referred to, of locating the rake-post on the heel of the cutting apparatus?

(Same objection—also, as immaterial, irrelevant, and leading.)

Ans. The advantage is, a two-wheeled machine with a hinged bar—with a jointed or hinged bar, you cannot carry your rake any place only on the heel of the bar.

Int. 23. Do you mean, that by locating the rakes and rake-post at that point, you are enabled to combine such raking and cutting apparatus with any desired construction of two-wheeled main frame?

(Same objection.)

Ans. Yes, sir; you can apply the rake-post on any two-wheeled machine by locating it on the heel of the bar.

Int. 24. Then, would a change of such apparatus from one two-
408 wheeled main frame to any other two-wheeled main frame make any difference with the operation of the hinged cutting apparatus, rake-post and rakes, assuming that the proper proportions are preserved?

(Same objection.)

Ans. I don't understand the question.

My question means this: Would, or not, the rake-post and rakes and cutting apparatus still perform the same work and in the same way whatever kind of a two-wheeled main frame you might attach them to?

(Same objection.)

Ans. Yes, sir.

Int. 25. In selling and using machines of that class, do you consider it any considerable advantage that the machine can easily be converted from a reaper to a mower, and back again?

(Same objection.)

Ans. Certainly it is an advantage.

Int. 26. Did you ever sell and run machines having the old-fashioned revolving reel?

(Objected to as immaterial and irrelevant.)

Ans. Yes, sir.

Int. 27. What work did the reel perform in such machines?

(Same objection.)

Ans. It tended to bring the grain back on the platform.

Int. 28. That was all, was it?

(Same objection.)

Ans. Yes.

Cross-examination by Mr. BENNETT:

X-int. 29. How far back does your knowledge date of what is known to the trade as combined machines?

Ans. To 1855 or 1856.

X-int. 30. By the term combined machine, do you not understand it to be a machine so constructed as to be used both as a reaper and a mower?

Ans. I understand it as such.

409 X-int. 31. And since the introduction of what are known as combined machines, has it not been considered a very great advantage "that the machine can easily be converted from a reaper to a mower, and back again?"

Ans. It has been considered an advantage.

X-int. 32. So far as your knowledge goes, have not combined machines been used to a very great extent from 1855 or 1856 up to and including the present harvest?

Ans. They were not used to a very considerable extent until about 1860, so far as my knowledge goes.

X-int. 32½. You say that your knowledge of combined machines dates back to 1855 or 1856; what makes of combined machines were you familiar with prior to 1860?

Ans. The Murray, Jersey Blue, and the Burrel; that is all I can think of at the present time.

X-int. 33. Had you any knowledge of the combined machines known as the Ball, Buckeye, or Allen prior to 1860?

Ans. I recollect the Allen combined machine prior to 1860.

X-int. 34. When did you first have brought to your notice the existence of the combined machines known as the Ball and the Buckeye?

Ans. My impression is, about 1859 or 1860.

X-int. 35. Were not both the Ball and Buckeye combined machines two-wheeled main frame machines, having hinged finger-bars, the Ball machine being what is known as a "rear cut," the Buckeye as a "front cut?"

Ans. That is my recollection of them.

X-int. 36. The object obtained by so constructing a machine as to be capable of being converted from a reaper to a mower and back again was the same prior to 1860 as it is now; is not such the case?

Ans. Prior to 1860 the object of manufacturers was to build a machine that they could change from a reaper to a mower, and in combined machines it is the same now.

410 X-int. 37. How far back do you date your knowledge of the hinged finger beam being used in connection with reapers, mowers, and combined machines?

Ans. About 1858.

X-int. 38. Are you acquainted with a class of combined machines consisting of two wheels, main frame, and a self-rake attachment, the rakes being so arranged that when revolved they pass entirely over the machine, and will admit of the driver riding on the machine?

Ans. I know of but one. But if the rakes pass entirely over the machine it would be impossible for the driver to ride upon the machine without being struck.

X-int. 39. Confining the last question to a machine——

(Witness here interrupts, and says he wishes to correct his last answer and says):

I wish to correct the last answer, because the rake can be so constructed as to pass over a man's head while riding on the machine.

X-int. 40. Do you know any machines so constructed at the present day?

Ans. I am not certain as to the Dorsey machine, but think that the rake passes over the driver's head.

X-int. 41. Examine the model No. 61, and state whether you know of any class of combined machines so constructed that with the rake, when revolved, passes entirely over the main frame, as shown in Model No. 61.

Ans. I don't, unless the Dorsey does.

X-int. 42. Referring to the model, Complainants' Exhibit Model of defendants' harvester, do not the rakes assume a perpendicular position when about opposite the rear end of the platform where the grain is deposited, and not pass over the main frame?

Ans. It does; yes, sir.

X-int. 43. Are you acquainted with what is known as the Brown or Dorsey machine, such as Exhibit Miller machine?

Ans. I don't know this machine; am not acquainted with it.

X-int. 44. Are you acquainted with the Dorsey machine, as built by Fritz?

411 Ans. Am slightly acquainted with it.

X-int. 45. How long have you been acquainted with the Dorsey machine, as so constructed?

Ans. I believe in 1875 was the first that I noticed the Dorsey machine particularly.

X-int. 46. In the Dorsey machine, does not the reaper bar extend out to about the centre of the rear of the main frame?

Ans. Yes.

X-int. 47. And does it not dispense with the joint at the inner end, and thus divide the weight more evenly on the truck?

Ans. The Dorsey machine has no joint at the shoe or heel, and I don't think that it divides the weight any more than an extension bar.

X-int. 48. Do you think it divides the weight as fully as an extension bar, and answers the same purpose?

Ans. I see no difference whatever; you have the weight of that bar to carry, no matter by what device you carry it.

X-int. 49. Then, so far as that is concerned, you consider it the same whether the cutter-bar be extended, as shown in Exhibit Miller machine, or an extension-arm be used, as shown in Complainants' Exhibit model of defendants' harvester?

Ans. Yes, so far as carrying the weight is concerned.

X-int. 50. What class of combined machines are you at present engaged in selling, and for whom do you sell?

Ans. I am at present engaged in selling the Champion machine, for Whitely, Fassler & Kelley, of Sprinfield, Ohio.

X-int. 51. In the combined machines, as manufactured by that firm, do the rakes pass over the main frame and driver's seat, as shown in model No. 61, or do they assume a perpendicular position while passing the main frame, as in Complainants' Exhibit model of defendants' harvester?

Ans. The rakes pass over a portion of the main frame, and do not assume an entire perpendicular position while passing round, but not over the driver's seat.

412 X-int. 51½. Are not Whitely, Fassler & Kelley, or some one of them, licensee of Mr. Hoffheins, the plaintiff in this case?

Ans. I do not know, sir.

X-int. 52. Are they not connected or interested in some way with

Mr. Hoffheins as to the patents upon which this suit is brought, and do they not profess to have the right or privilege to manufacture under said patents?

Ans. Not to my knowledge. I never heard them say so.

X-int. 53. Have you ever heard so from any one else?

Ans. I have.

X-int. 54. From whom?

Ans. From some of their employees—now it's going to trouble me to give you their names.

X-int. 55. Please state what you have heard bearing upon that matter.

(Objected to, for the reason that such statements made by others than the parties in interest, or in their presence, are inadmissible.)

Ans. My recollection now is that it was spoken of by some of their employees that Whitely, Fassler & Kelley had compromised with Hoffheins.

X-int. 56. Is that all you ever heard bearing upon that subject?

(Objection continued.)

Ans. Some one told me that Mr. Hoffheins had said that he had settled with the Champion folks.

X-int. 57. Did Mr. Hoffheins ever say anything to you bearing upon that subject?

Ans. I have no recollection that he did.

X-int. 58. In a two-wheeled Buckeye machine with a hinged bar, is not the rake located on or about the centre of the platform; I refer to those machines known as the Buckeye table rake?

Ans. Yes.

413 Re-direct:

Int. 59. In what you have said as to the Dorsey machine, you referred all along, did you not, to that machine as built by Pritz, of Dayton, Ohio?

(Objected to, as grossly leading.)

Ans. Yes.

JOHN R. BLACK.

Sworn to and subscribed before me this 23d day of July, 1878.

GEO. A. HECKERT,
Notary Public and Special Examiner.

Defendants' counsel is notified that the Christ machine and the Bell machine, referred to in the cross-examination heretofore made of Reuben Hoffheins, are now subject to his inspection, and that Mr. Hoffheins is now present for such cross-examination thereon as he may desire to make.

Defendants' counsel states that he will examine the two machines referred to at his earliest convenience, and then notify counsel whether or not he desires to cross-examine Mr. Hoffheins in reference to them. That it is unreasonable to expect that counsel should proceed with the cross-examination immediately, and that this will be apparent to the court when it is stated that one of the machines referred to—the Bell machine—is at Mr. Hoffheins' farm, about five miles from the place where the testimony is now being taken.

Complainants' counsel replies that he is willing to adjourn the taking of testimony to the place where the Bell machine is, or that he will produce the same at York, where the testimony is now being taken,

any day this week that defendants' counsel may name, and that Mr. Hoffheins is, and will be, voluntarily present, for the purpose named, either there or here, if defendants' counsel will indicate his wishes in this regard.

414 Defendants' counsel replies that it will not be convenient to examine either of the said machines, or enter upon a cross-examination in reference to the same, until the beginning of next week, at the earliest; but as soon as he has made an examination of these machines he will give complainants' counsel ample notice, so that he may produce the witness for cross-examination, if desired by defendants' counsel.

Complainants' counsel states that, under stipulations already made, he had expected to proceed with and, if possible, conclude his proofs during the present week, and had made another engagement in Chicago in another case, for next week; and hence, as at present advised, he cannot produce the witness at the beginning of next week, but the machines can be examined any day Mr. Hoffheins is at home.

Defendants' counsel replies that he does not wish it to be construed as insisting upon the witness being produced next week, but that it will be impossible to proceed this week, and that any time thereafter that complainants' counsel will produce the witness for cross-examination he will endeavor to arrange accordingly. It is made impossible for the reasons that he is compelled to attend court to-morrow in Philadelphia, in the case of Wallace et al. against Fox, and that on Monday, July 22d, he was served with notice to appear in Cincinnati on Thursday, July 25th, to attend the taking of testimony in the case of Austin vs. Starr, jr.; that he has used his best efforts and endeavors to have the last-named case postponed, but without avail, and therefore insists that this case, which cannot possibly be argued before September, be postponed to some future day.

Counsel for complainants offers in evidence a certified copy of the file wrapper and contents in the matter of the letters patent granted Reuben Hoffheins, dated November 3d, 1863, No. 40481, for improvement in harvesters, the same being marked "Complainants' Exhibit, 1863, File Wrapper and Contents."

Also, a certified copy from the files of the U. S. Patent Office, of the decision of Chief Justice D. K. Carter, in the matter of the interference of Reuben Hoffheins vs. Adam R. Reese, for harvester,

415 the same being marked "Complainants' Exhibit Interference Decision."

In view of the objections above noted by defendants' counsel, it is agreed, in the presence of the examiner, that further taking of proofs be adjourned, to be resumed at the same place after the close of the present week on such day as complainants' counsel may designate, he giving the defendants' counsel two or three days' notice thereof by telegraph.

Adjournment accordingly.

GEO. A. HECKERT,
Notary Public, as Special Examiner.

August 1st, 1878, taking of testimony resumed pursuant to notice. Counsel present as before.

REUBEN HOFFHEINS, being recalled and interrogated, deposes as follows:

Int. 1. Have you a duplicate of the model filed with your application on which were granted your original patent No. 40481 of November 3d,

1863, reissue No. 2499 (original duplicate having been burned, also original model)?

Ans. Yes; this model, marked Complainants' Exhibit No. 63, and already offered in evidence, is a duplicate of the original model filed with the application, except that the original model did not contain the front wooden cross-bar nor the metal piece next the outer drive-wheel, and running from the cross-bar to the main frame; also, instead of the seat attached to the model No. 63, the original model had a seat supported by an S-shaped spring, similar to that marked "loose seat belonging to Complainants' Exhibit No. 63"; also, there is a slight difference in the outer divider; also, the stay-rod running from the inner front corner of the main frame to the rake-post was not on the original model; and the tongue in model No. 63 is made in two parts bolted together, and in the original model the tongue and beam were made in one piece. In all other respects the two models are the
416 same. They were both made at the same time by the same man, from the same patterns, and under my directions. I should also add that the main driving-gear on the original Patent Office model was at or near the inside driving wheel, while in this model, No. 63, it is changed to the other drive-wheel, and the bevel gear faces the other way. This change does not affect the working of the machine any.

Int. 2. Look at the remnant of a burned model now shown you, and, if you know, state what it is, and how it came to be in that condition.

Ans. After the defendants took their testimony in Philadelphia in this case, at Mr. Harding's office in Philadelphia, all the models were temporarily left there. By a fire which occurred there shortly after, these models were, as I learned from Mr. Harding, more or less completely destroyed or injured by the fire. This burned piece of a model was furnished to me by Mr. Harding as being all that remained of the certified duplicate of the model belonging to my patent of May 20th, 1862, which duplicate has been offered in evidence and marked "Complainants' Exhibit, Hoffheins' Patent Office Model of Reissue No. 2224, J. Gutman, jr., examiner." I remember that model very well, and from my recollection, I am able to state that this is a remnant of that model.

(Remnant of burned model referred to is offered in evidence, and marked "Exhibit No. 2224, Burned Model.")

Cross-examination declined.

REUBEN HOFFHEINS.

Adjourned until to-morrow, August 2d, 1878, at 9 o'clock a. m., at same place.

GEO. A. HECKERT,
N. P., as Special Examiner.

August 2d, 1878, taking of testimony resumed. Present as before.

417 It is hereby agreed, for the purposes of this case, that A. A. Hamilton, of Coatesville, Pa., if called and examined as a witness on part of complainants, would testify to the same facts as have been testified to by John R. Black, already examined as a witness on the part of complainants, and to a like experience in connection with reaping-machines, and this agreement shall have like effect as if the said Hamilton were duly produced and examined, and so testified, subject to all legal objections which might be taken to such testimony.

Complainants' counsel offers in evidence a certified copy of file wrapper, and contents, in the matter of letters patent granted to Reuben

Hoffheins, May 20th, 1862, No. 35315, the same being marked "Complainants' Exhibit 1862, File Wrapper and Contents."

(Objected to.)

Also, bound volume of the Scientific American, containing vols. 9, 10, and 11 of said publication, with particular reference to the cuts and description of the Hoffheins combined harvester and raking apparatus, as contained on page 80, of volume 10, the same to be produced at the hearing.

(Objection is made to the same being received in evidence, or being so considered, so far as relates to any question at issue in this cause; and further, that the date of said publication is long subsequent to the date of the alleged invention.)

Note is here made that since the adjournment of yesterday, the Christ machine and the Bell machine, referred to in the previous cross-examination of Reuben Hoffheins, have been submitted to the examination of defendants' counsel, and have been examined by him, and he can now cross-examine Mr. Hoffheins with reference to said machines, if he so desires.

Defendants' counsel states that, as at present advised, he does not wish to interrogate the witness, Hoffheins, in reference to said machines, but if, after he has had sufficient time and opportunity to fully test and operate said machines, he will, if he desires to further examine the
418 witness, Hoffheins, advise complainants' counsel of the fact. Defendants' counsel here calls upon complainant and his counsel to produce, or cause to be produced, the said machines, above referred to, at the hearing of this cause, and that the defendants and their counsel be allowed full and ample opportunity of setting up and operating said machines, if they so desire, upon giving notice thereof to complainants and their counsel.

Complainants' counsel does not admit any further responsibility or obligation to defendants on the part of himself or his clients in connection with said machines. And any further requests defendants may have to make hereafter, can be considered and replied to when they are made.

GEORGE T. JACOBS, a witness produced on behalf of complainants, being first duly sworn, in answer to interrogatories propounded to him, deposes and says, as follows:

Int. 1. State your name, age, residence and occupation.

Ans. Geo. T. Jacobs; age, 33 years; 1003 G street, south, East Washington, D. C.; model maker.

Int. 2. Look at the model now before you, and state if you made it.

Ans. This is the model that I made.

Int. 3. From what did you make it?

Ans. R. Hoffheins' harvester rake reissue, April 10th, 1866, No. 2224, recorded in Patent Office. I made it from this drawing or drawings; there are three sheets of them.

Int. 4. Is this model a correct representation of the machine shown in the drawings above referred to?

Ans. It is.

Int. 5. Did you make any effort to ascertain whether the original model, or any part of it, was left after the late fire in the Patent Office?

Ans. I did; Mr. Ford, the man in charge of repairing what was left of the ruins of the models, told me that no part of it could be found.

419 Int. 6. Are you in the habit of making models of Patent Office drawings?

Ans. I am.

(Model above referred to is offered in evidence, and marked "Complainants' Exhibit, Substitute Model of Reissue No. 2224.")

Cross-examination declined.

GEORGE T. JACOBS.

Reference will be made at the hearing to the Patent Office Official Gazette, of the proper date, in proof of the destruction by fire of the Hoffheins original models appertaining to his patents of May 20th, 1862, and November 3d, 1863, and if required, the certificate of the Commissioner of Patents to the same effect, will be produced in evidence at the hearing, or before.

Adjourned.

420 United States circuit court, northern district of Ohio. In equity.

REUBEN HOFFHEINS ET AL.
vs.
C. RUSSELL & CO. ET AL.

DEFENDANTS' RECORD.

George Harding, John R. Bennett, for defendants. George Harding, of counsel for defendants.

421 *Answer.*

In the circuit court of the U. S. in and for the northern district of Ohio. In equity.

REUBEN HOFFHEINS
vs.
C. RUSSELL & CO. ET AL.

The joint and several answers of C. Russell & Co., Clement Russell, William K. Miller, and James M. Tonner, the defendants, to the bill of complaint of Reuben Hoffheins, James A. Sarton, and George W. Crouse, complainants.

These defendants, now and at all times hereafter, saving and reserving unto themselves, and each of them, all benefit and advantage of exception, which can or may be had, or taken to the many errors, uncertainties, and other imperfections in the said complainants' said bill of complaint contained, for answer thereunto, or unto so much and such parts thereof as these defendants are advised is or are material or necessary for them, or either of them, to make answer unto, these defendants severally answering, say: That they have been informed, and believe it to be true, that the said complainant, Reuben Hoffheins, did, on or about the twentieth day of May, 1863, obtain letters patent of the United States for an alleged new and useful improvement in harvesters; but these defendants, for greater certainty therein, crave leave to refer to the said letters patent when the same shall be produced.

422 And these defendants, further answering, say, that they do not know, and have not been informed, save in and by the said complainant's said bill, and cannot set forth as to their belief, or other-

wise, whether or not the said complainant, Reuben Hoffheins, was the first and original inventor of the alleged improvement, patented in and by the said letters patent, and they leave the complainants to make such proof thereof they may be advised is necessary or material.

And these defendants, further answering, say, that they have been informed, and believe it to be true, that the said complainant, Reuben Hoffheins, did, on or about the tenth day of April, 1866, surrender the said letters patent, and obtain in lieu thereof reissued letters patent No. 2224, for an alleged improvement in harvesters; but these defendants, for greater certainty therein, crave leave to refer to the said reissued letters patent, when the same shal' be produced.

And these defendants, further answering, say, upon information and belief, that the said reissued letters patent, numbered 2224, are not for the same alleged improvement as that patented in and by the said original letters patent, but that on the contrary the said reissued letters patent No. 2224, are for a substantially and materially different thing from that patented in and by the said original letters patent, and are therefore null and void.

And these defendants, further answering, say, that they have been informed, and believe it to be true, that the said complainant, Reuben Hoffheins, did, on or about the third day of November, 1863, obtain obtain other letters patent of the United States for another alleged new and useful improvement in harvesters; but these defendants for greater certainty therein, crave leave to refer to the said letters patent when the same shall be produced.

And these defendants, further answering, say, that they do not know and are not informed, save in and by the said complainant's said bill, and cannot set forth as to their belief, or otherwise, whether or not the said complainant, Reuben Hoffheins, was the first and original inventor of the alleged improvement patented in and by the
423 said letters patent, and they leave the complainant' to make such proof thereof as they may be advised is necessary or material.

And these defendants further answering, say, that they have been informed, and believe it to be true, that the said complainant, Reuben Hoffheins, did surrender the said last-mentioned letters patent, and did, on or about the twenty-eighth day of February, 1865, and the seventh day of November, 1865, respectively, obtain in lieu thereof reissued letters patent for improvement in harvesters, in two divisions, numbered, respectively, 1888 and 2102, but these defendants, for greater certainty therein, crave leave to refer to the said several last-mentioned reissued letters patent when the same shall be produced.

And these defendants, further answering, say, that they have been informed, and believe it to be true, that the said complainant, Reuben Hoffheins, did, on or about the nineteenth day of February, 1867, surrender the said reissued letters patent, No. 2102, and obtain in lieu thereof other issued letters patent, numbered 2490, for an alleged improvement in harvesters, but these defendants, for greater certainty therein, crave leave to refer to the said reissued letters patent No. 2490, when the same shall be produced.

And these defendants, further answering, say, upon information and belief, that the said reissued letters patent, No. 2490, are not for the same alleged improvement as that patented in and by the said original letters patent, granted to the said complainant, Reuben Hoffheins, on the third day of November, 1863, nor for a distinct and separate part thereof, but that, on the contrary, the said reissued letters patent, No. 2490, are for a substantially and materially different thing from that

patented in and by the said last-mentioned original letters patent, and are therefore null and void.

And these defendants, further answering, say, that they do not know, and that not being informed, save in and by the said complainant's said bill, and cannot set forth, as to their belief or otherwise, whether or
424 not any assignment of any interest in the aforesaid letters patent, or any of them, was ever made or recorded in the Patent Office of the United States, or whether or not the complainants acquired thereby any interest in the said letters patent, or in any of them; and they leave the complainants to make such proof thereof as they may be advised is necessary or material.

And these defendants, further answering, deny, upon information and belief, that the said Hoffheins was the original and first inventor or discoverer of any material and substantial part of the thing patented, either in the said original or reissued letters patent, No. 2224, but on the contrary these defendants aver that long prior to the alleged or any invention thereof by the said Hoffheins, the same had been invented by the following persons, and letters patent granted therefor on the following dates, viz:

McClintock Young, July 9, 1861.
Robert Brown, June 18th, 1861.
Lewis Miller, December 3, 1861.
Ephraim Ball, December 1, 1861.
William K. Miller, July 2, 1861.
John P. Manny, July 14, 1857.
Wm. H. Kirby & D. M. Osborne, July 2, 1861.
Lewis & Jacob Miller, July 5, 1859.
Wm. H. Seymour, December 14, 1852.
Aaron Palmer & S. G. Williams, January 24, 1854.
Stephen A. Lindsay, December 11, 1860.
Stephen A. Lindsay, August 3, 1859.
Robert Bryson, April 8, 1862.

And these defendants, further answering, deny, upon information and belief, that the said Hoffheins was the original and first inventor or discoverer of any material and substantial part of the thing patented, either in the said original or reissued letters patent, No. 2490; but on the contrary, these defendants aver that long prior to the alleged, or any invention thereof, by the said Hoffheins, the same had been
425 invented by the following persons, and letters patent granted therefor on the following dates, viz:

James S. Marsh, February 10, 1863.
Thomas S. Whitenack, February 5, 1861.
Thomas S. Whitenack, reissue, January 15, 1857.
Lewis Reese, April 10, 1860.
Lewis Reese, reissue, May 29, 1866.
Lewis Miller, December 3, 1861.
William K. Miller, July 2, 1861.
Lewis & Jacob Miller, July 5, 1859.

And these defendants, further answering, say upon information and belief that the written descriptions of said reissued letters Nos. 2224 and 2490 are not in such full, clear, concise, or exact terms as to enable any person skilled in the art to which the subjects described in said reissued letters patent appertain to make, construct, and use the same, and that therefore said reissued letters patent Nos. 2224 and 2490 are null and void.

And these defendants, further answering upon information and belief,

aver that the alleged improvements described and claimed in the reissued letters patent Nos. 2224 and 2490 were in public use in this country for more than two years before the application of the said Hoffheins for the said original letters patent by the following persons, and at the following places.

And these defendants, further answering upon information and belief, aver that the alleged improvements described and claimed in the reissued letters patent Nos. 2224 and 2490 were in public use in this country, with the knowledge and consent of said Hoffheins, for more than two years before the application of the said Hoffheins for the said original patent by the following persons and at the following places.

These defendants deny that each and every of said improvements described or claimed in either of said reissued letters patent were or are valuable and useful, or that the same, or any of them, are in practical operation and public use through said Hoffheins, or his
426 licensees, and they deny that either Hoffheins or the public ever derived profit therefrom. On the contrary, these defendants aver that the said alleged inventions of Hoffheins have been tried and abandoned by several parties and by said Hoffheins himself, and the said co-complainants are not now using the same, and have never used the same; and that the said Hoffheins, on July 4th, 1865, obtained letters patent No. 48557 for a different combination and arrangement of combined rakes and reels. As to the general allegations of infringement, these defendants deny that they, or either of them, have infringed either of the said reissued letters patent, or either of the claims thereof, by making, selling, or using any machine containing either of the said patented features.

And these defendants, further answering, say that the combination of defendant's machine, and the adaption and organization of a combined rake and reel thereto has been the subject of several patents, and among of patents granted to—

John A. Dodge, June 26, 1866, and to Dodge and Perry, December 3, 1867.

Adam R. Reese, February 16, 1864, and May 1, 1866.

James S. Marsh, February 10, 1863, and October 16, 1866.

Samuel Johnston, February 7, 1865, and July 7, 1868.

Owen Dorsey, March 4, 1856.

Ephraim Ball, December 1, 1857.

William K. Miller, July 2, 1861.

J. A. Dodge, June 26, 1866.

Dodge and Perry, December 3, 1867.

A. R. Reese, February 16, 1867, and May 1, 1866.

And that the object of said Hoffheins in reissuing said patents as aforesaid was to attempt to embrace therein subsequent improvements invented and patented by others.

That the location of the driver, the arrangement of the platform, the construction of the draught-frame are wholly different from the alleged invention of said Hoffheins.

427 An unobstructed space for the driver on defendants' machine is obtained by a wholly different organization of parts from that described by said Hoffheins and set forth in his several claims, or either of them.

That prior to the said reissued letters patent, No. 2490, of said Hoffheins, numerous forms of combined rake and reel, and numerous adaptations to harvesters of varied forms, had been invented and patented,

which constituted a prior state of the art in this regard, by which the scope of Hoffheins' claim as a patentee are limited.

These defendants here refer especially to the letters patent granted to Owen Dorsey, March 4, 1856; Stephen A. Lindsay, August 2d, 1859; Thomas Whitenack, February 5, 1861; reissued January 15, 1867; Lewis C. Reese, April 10th, 1860, reissued May 29th, 1866, J. C. Twinning, August 14, 1860, reissued February 2d, 1869; McClintock Young, July 9th, 1861, reissued January 15th, 1867; J. H. Mears, March 4th, 1862; J. H. Mears, June 17th, 1862; C. R. Brinkerhoff, May 24th, 1859; Caleb Lee, March 3d, 1867; V. H. Wemple, February 16th, 1858; C. S. Groveberg, June 28th, 1859.

That prior to the alleged invention contained in said reissued letters patent, No. 2490, the same or a material part thereof was known to and used by Henry Fisher, of Canton, Ohio, Moses Shalter, and Ray, of Alliance, Ohio, at Alliance, Ohio; Thomas Whitenack, of Philadelphia, New Jersey, at Philipsburg, New Jersey; Lewis C. Reese and Adam R. Reese, and also John Mellick, Christopher S. Mellick, Reuben Metz, Hugh P. Pierson and William Gould, of South Easton, and to Mathias Brakeley, said knowledge and use being at or near Philipsburg, New Jersey; William K. Miller, of Canton, Ohio, at or near Canton, Ohio, and at and near Massilon, Ohio; Samuel Beatty, of Massilon, Ohio; Orvin C. Wales, of Massilon, Ohio, at and near Massilon, Ohio; Ira M. Allen, of Canton, Ohio, at and near Canton, Ohio; Cyrenus Wheeler, jr., of Auburn, New York, at and near Auburn, New York; Lewis Mille, of Akron, Ohio, and Jacob Miller, of Canton, Ohio, at and near Canton and Akron, Ohio; Samuel Johnston, formerly
428 of Buffalo, New York, now at Bockport, New York, at and near Buffalo, New York, and at and near Syracuse, New York; McClintock Young, jr., of Frederick, Maryland, at and near Frederick, Maryland; James S. Marsh, of Lewisburg, Pennsylvania, at and near Lewisburg, Pennsylvania, and the said invention so patented was described in the above recited letters patent of the United States to Thomas S. Whitenack and Lewis C. Reese, and that by reason thereof said reissued letters patent of said Hoffheins are null and void.

That prior to the alleged invention contained in the said reissued letters patent, No. 2224, the same or a material part thereof was known to and used by Adam R. Reese, John Mellick, Christopher S. Mellick, Reuben Metz, Hugh P. Pierson, and William Gould, of South Easton, and Mathias Brakely, said knowledge and use being at and near Philipsburg, New Jersey; Robert Brown, formerly of Frederick, now of Dayton, Ohio, at and near Frederick, Maryland; John P. Adriance, of Poughkeepsie, N. Y.; Brown, of Poughkeepsie, New York, and Samuel R. Platt, of New York, N. Y., at or near said Poughkeepsie; William K. Miller, of Canton, Ohio, at and near Canton, Ohio, and at and near Massilon, Ohio; Ira M. Allen, of Canton, Ohio, at and near Canton, Ohio; Samuel Beatty, of Massilon, Ohio, at and near Massilon, Ohio; Orvine C. Wales, of Massilon, Ohio, at and near Massilon, Ohio; William H. Seymour, and Dayton S. Morgan, of Brockport, New York, at and near Brockport, and Poughkeepsie, New York, and at and near Canton and Akron, Ohio; Cyrenus Wheeler, jr., of Auburn, New York, at and near Auburn, New York, and at and near Poplar Ridge, New York; Lewis Miller, of Akron, Ohio, and Jacob Miller, of Canton, Ohio, at and near Akron and Canton, Ohio; Samuel Johnston, formerly of Buffalo, N. Y., now of Brockport, New York, at and near Buffalo, New York, and at and near Brockport, N. Y., and at and near Syracuse, N. Y.; Aaron Palmer, of Brockport, New York, and S. G. Williams, of

Janesville, Wisconsin, at and near Janesville, Wisconsin, and
429 Brockport, New York; McClintock Young, jr., of Frederick, Maryland, at and near Frederick, Maryland; James S. Marsh, of Lewisburg, Pennsylvania, at and near Lewisburg, Pennsylvania; and that by reason thereof the said reissued letters of patent are null and void.

And these defendants, further answering, say that, in view of the state of the art of constructing harvesting machines at the time when the said complainant, Reuben Hoffheins, pretends that he invented alleged improvements patented in and by the said reissued letters patent, Nos. 2224 and 2490, the said reissued letters patent and the several claims therefore are not for a legally patentable subject-matter, and that the said several claims thereof and the said letters patent numbered 2224 and 2490 are therefore null and void.

And these defendants, further answering, say that they are not now, nor neither of them, making, using, or selling, nor have they, or either of them, ever made or sold any harvesters containing any of the alleged improvements described and claimed in either or both of the said reissued letters patent Nos. 2224 and 2490.

Without this that there is any other matter, cause, or thing in the said complainants' said bill of complaint contained material or necessary for these defendants to make answer unto, and not herein and hereby well and sufficiently answered, confessed, or traversed, and avoided or denied, is true to the knowledge or belief of these defendants, all which matters and things these defendants are ready and willing to aver, maintain, and prove as this honorable court shall direct, and humbly pray to be hence dismissed, with their reasonable costs and charges in this behalf most wrongfully sustained.

GEORGE HARDING,
Solicitor and of Counsel for Defendants.

430 In the circuit court of the U. S., northern district of Ohio. In equity.

REUBEN HOFFHEINS
vs.
C. RUSSELL & CO. ET AL.

It is hereby stipulated and agreed by and between counsel in the above cause, that Samuel E. Cavin, esq., notary public, of Philadelphia, may act as special examiner, and report the testimony in the above cause, as though appointed by court so to do.

Philadelphia, October 1st, 1877.

S. A. BOWMAN,
Counsel for Complainant.
GEORGE HARDING,
Counsel for Defendants.

Depositions of witnesses on behalf of defendants, produced, sworn, and examined before Samuel E. Cavin, esq., notary public, acting as special examiner in pursuance of the foregoing stipulation, at the office of George Harding, esq., No. 900 Chestnut street, Philadelphia, Penn.

Present, Samuel A. Bowman, esq., of counsel for complainant; George Harding, esq., of counsel for defendant.

J. BOYD ELIOT, a witness on part of defendants, being produced,

sworn, and examined, in answer to interrogatories propounded by Mr. HARDING, deposes and says:

Int. 1. What is your name, age, residence, and occupation?

431 A. John Boyd Eliot; am fifty years of age; reside in New York City, and am a mechanical engineer and a solicitor of patents, and for the last twenty years I have been much occupied in testifying as an expert in patent causes pending before the United States courts.

Int. 2. Have you paid attention to the subject of reaping and mowing machines, and, if so, to what extent and for how long a time?

A. I have investigated the subject very generally for the last twenty-five years. I first began my knowledge of the matter of the operation of harvesting machines by using a McCormick machine, I think in 1850 or 1851, and from that time down to the present I have frequently given attention to the construction and mode of operation of various kinds of such machines.

In 1857 I became the editor of the Scientific Artisan, which was published in Cincinnati, Ohio, and continued in that position until the spring of 1862, and during the time of my residence there I was frequently called upon to make examination of various kinds of harvesting machines, and to solicit patents therefor, and also to examine patents thereon for the purpose of making comparison concerning the inventions involved therein, and to testify in cases pending before the United States courts, and from that time to the present there has seldom been any cases of important litigation concerning such machines without my being examined on the subject, or without having given testimony concerning their structure and mode of operation, and the patents on the several machines.

I have often seen such machines in practical operation in the field where they were regularly at work, and also where they were in competition at various trials, at various fairs, for the purpose of determining their comparative merits; and I have also frequently been present where trials were made by manufacturers of machines for the purpose of determining the practical value of newly constructed devices.

Int. 3. Have you examined, and do you understand, the origi-

432 nal letters patent of Reuben Hoffheins, No. 35315, dated May the 20th, 1862, for improvement in harvesters, and have you examined the certified copy of the model, marked "Complainants' Exhibit, Patent Office Model of Original Patent," and do you understand the same?

A. I have examined the exhibits referred to in the question, and believe that I understand their construction and operation as represented in each of the exhibits.

Int. 4. Have you examined, and do you understand, the reissued letters patent of R. Hoffheins, No. 2224, and dated April 10th, 1856?

A. I have examined said reissued patent, and believe that I understand the same.

Int. 5. Please refer to the original and the reissued letters patent, mentioned in the two last questions, and state whether the said reissue describes and claims the same invention, and point out wherein the said reissue has been changed or modified from said original patent. In giving your answer, please also refer to the original model above mentioned.

(Question objected to as incompetent.)

A. I have made the comparison called for in the question, and have several times carefully compared the invention specified and claimed

in the said reissued patent with the invention specified and claimed in the original letters patent, and, as I understand the subject, I consider that there are various combinations claimed in the reissued patent which are not in any manner set forth, or shown, or described in the original patent; some of which differences I will now proceed to point out, and at the same time refer to the model in making my comparisons.

In the first place, I find that the said model is, in my opinion, correctly represented in its proportions and relations to the several parts in the drawings of the original letters patent, which consist of three views, represented, respectively, in Figs. 1, 2, and 3. The description of the said model and drawings, as given in the said original
433 patent, is, in my opinion, substantially correct; and I find that the said original patent, as stated in the specification, is for improvements in machines for harvesting grain; and the specification further states as follows:

"My said invention consists in certain improvements in the manner of mounting and operating a revolving rake, as will be hereinafter more fully explained."

The specification then proceeds to describe the construction and operations of the invention or inventions represented in the model, and also shown in the drawings of the said patent. Without quoting the entire description, I may state that the invention consists, in general terms, in mounting a rake upon a quadrant-shaped platform, said platform being hinged to the frame of a two-wheeled machine in such a manner that raking-arms will maintain at all times a proper working position with the surface of the platform, and at the same time receive motion from driving mechanism mounted on the main frame. This result is accomplished by constructing the raking apparatus in a peculiar manner, and mounting it in a peculiar manner upon the platform of the machine, and also by connecting the driving mechanism of said rake with the driving mechanism on the main frame, by a belt mounted in a peculiar manner, so that the varying changes of the platform and the raking apparatus, relatively to the main frame and the gearing thereon, may not effect the driving mechanism for the rake.

The specification, in describing some of these parts, says:

"D is a segmental platform, provided with a divider, E, at its outer end, resting on a roller, *e*."

"F is a draw-bar, connected at front by a universal joint to the frame A, and attached to a shoe, *f*, upon which the inner side of the platform may rest."

434 "G is a lateral brace rod, hinged at one end, beneath the right-hand rear corner of the main frame, and at the other to the draw-bar F, or shoe *f*.

"H is a link by which the inner end of the platform is suspended from the back of the main frame."

Now, this language, as taken from the specification, is a correct description of the several parts which have reference to the platform, and the devices by which it is attached to the main frame, and by which it is permitted to vary its movement to conform to the unevenness of the ground, relatively to the main frame. And the portion of the specification which I have quoted is all that is contained in said original patent, apart from the drawings, that explains the construction and position of the several parts referred to in the said quotations.

Now, I find in referring to the drawings of said original patent that the link that is called H in the specification, and which is for the pur-

pose of suspending the inner side of the platform to the main frame, so as to keep it on a level with the wheel at the outer shoe, at the opposite side of the platform, and by which the platform may be sustained in substantially a level position, or more properly about the same height *h* from the ground, is attached at one end to a sort of projection or arm that extends out from the platform, its extreme distance being nearly to the centre of the rim of the left-hand drive-wheel, which is marked in the specification by the letter B, but the central line of said link is directly in a vertical line that would correspond to a plane, projected from the left-hand face of the said left-hand drive-wheel B; consequently the inner point of suspension of the platform is directly in line with the left-hand face of the left-hand drive-wheel, or on that side next to the platform.

In comparing this position of the link H with the link shown in the model referred to in the question, I find that the model shows the said link as being suspended at the point on the frame between the
435 centre of the rim of the left-hand drive-wheel and the left-hand side of said wheel, or plane, extending from the left-hand face of the said wheel; consequently the model represents the point of suspension of the said link as being located a little nearer to the right hand in looking towards the rear of the machine than where it is shown in the drawings of the original patent.

Now, in referring to the reissued patent No. 2224, I find that great stress is laid upon this point of suspension, or point where the inner edge of the platform is supported in a vertical position from the main frame.

It is set forth in the said reissued patent as a very important matter, and I find in the drawings of the said patent that the point of suspension of the said link is located a little to the right of a plane passing through the centre of the rim of the left-hand drive-wheel, and I find that the bracket to which said link is attached at its lower end is also extended to the right of the center of said wheel, or of a plane extending from the centre of said wheel; or, in other words, I find in the drawings of said reissue, at figure 9, that the axis of said links is when more that half the distance of the entire width of the face of the drive-wheel B farther to the right hand than is shown in the drawings of the original patent, and is considerably farther to the right than is represented in the model, which is certified to be like the original model in the Patent-Office of the said original patent.

By referring to the specification of the reissued patent No. 2224, I find the following language:

"From the inner corner of the finger-beam or platform, or from the metal foot-piece 9 of the rake and reel support, by which the support is screwed to and braced on the platform and finger-beam, a strong bracket, I, is extended beyond the left-hand side beam of the draught-frame.

"To the extremity of this arm a swinging link or chain, *f*, is loosely connected or jointed, as at 9, and, by means of this link or chain
436 the finger-beam, platform, and rake, although arranged at the left of the left-hand drive-wheel B, can be suspended from a point which is to the right of the said left-hand side beam.

"The suspension is effected by hinging the upper end of the link or chain to the rear-beam of the draught-frame, as represented at *h*."

Now, in comparing this language of the reissue with that which I have already quoted from the original patent, it will be seen that scarcely any of the said quotation from the reissue is contained in the original

patent, or of the specification thereon. In fact, nothing is said in the original patent concerning the location of this link or means of connection between the platform and the main frame, and is only described and shown in the specification as a link "by which the inner end of the platform is suspended from the back of the main frame."

Futhermore, in the said quotation from the reissue, the word "finger beam" is frequently used; whereas, in the original patent the word is not used at all in any portion of the specification; nor is anything corresponding thereto either shown or described in the drawings or specification of the said original patent.

Again, the word "chain" is frequently used in the said quotation, whereas in the original specification the word is not mentioned, neither is it shown in the drawings.

Again, the words "strong bracket" mentioned in the said quotation are not found in the original letters patent, nor is any reference letter shown in said original patent concerning the functions attributed to these peculiar points and methods of suspension. I will refer again to them after I have referred to the raking apparatus set forth in the original patent.

I will now refer to the method of mounting the raking apparatus, with the platform, as set forth in the said original patent; and in the original specification I find the following language:

437 "I is a post rigidly secured to the inner side of the platform, and reclining over the rear of the main frame; *i* is a brace rod extending from the draw-bar to the said post to support the ladder at the top. J is a bar mounted on the top of the post I, and constituting the bearing in which the disk K rotates. The rakes or reel-arms L L′ are mounted in couples on the end of the horizontal shaft M M, which are journaled at right angles across the rotating disk K."

This is all of the language in the original specification which shows the location of the axis of the rake as mounted upon the platform, and as related to the main frame of the machine. But upon comparing the said language with that pertaining to the same subject, as set forth in the reissued patent 2224, I find—

First, that "Fig. 9 is the rear elevation of a portion of the machine, showing the manner of suspending the rake support upon the hinged joint finger-beam or platform thereof."

Now, in comparing this quotation with the original patent, there are only three figures, or views, shown in the said original patent, and as already stated by me the word "finger-beam" is not mentioned in the specification of the said original patent, nor is there anything shown in the drawings to correspond thereto, and therefore the words of the above quotation, referring to Fig. 9 of the reissue, viz, "the hinge-joint finger-beam," I regard as plainly new matter—as introduced into the said reissued patent.

Again, in the said reissued patent, concerning the location of the rake-support, I find the following language:

"It is also important to have the suspension of the rake made in such a manner that the base of the support of the axis of the rake is wholly upon the hinged finger-beam or the platform thereof, and also that the rake, the finger-beam, and the platform shall be rigidly connected together."

438 Now, in this quotation the word "finger-beam" is evidently introduced as an important element in connection with the platform for the support of the rake; whereas in the original letters-patent the word "finger-beam" is not mentioned at all; and the drawings

in the said original patent show the base of the support of the rake so far back, or to the rear of the front edge of the platform, that it cannot, in my opinion, be brought in contact with the finger-beam without changing its locality very materially or the mode of its construction of attachment.

Again, in the said reissued letters patent I find the following language:

"D is the finger-beam, and E the platform of the harvester, the cutting apparatus and guard fingers being left off. F is a support for a combined rake and reel. This support is mounted rigidly upon the inner front corner of the platform and heel of the finger-beam, or wholly upon any part of the platform which is to the left of the left-hand drive-wheel B, or to the right of said drive-wheel if it is a right-hand machine."

Now, upon comparing this language as last quoted, with that which I have already quoted from the original specification, it will be seen that scarcely any of the language last quoted, concerning the location of the rake-support on the platform of the machine, is found in the original specification; or, in other words, the "finger-beam" is not mentioned at all; and the location of the rake-support upon the finger-beam, or any portion of it, is in my opinion entirely without authority as purporting to come from the original patent; and it should have been left out with just as much propriety as the "cutting apparatus" and "guard-fingers" referred to in the last quotation, which states they are "left off."

Adjourned to Saturday, October 6th, at 10 a. m.

439 OCTOBER 6TH, 1877.

Mr. ELIOT resumes—

Again, I also find in the said reissued patent a description of the peculiar construction of the rakes, in the following language:

"The angular form of the rakes and reels, enables me to employ a guide-way which is perpendicular to the tops of the platform, as with this form the descent of one of the rakes, or one of the reels of the respective pairs of rakes and reels, necessarily causes an ascent or inversion of the other."

And again, the specification says: "The respective rakes and reels are arranged with the peculiar obliquity represented, so as to more effectively operate upon the standing grain and also to remove the cut grain from the platform. It would be observed that they stand oblique to a vertical and also a horizontal plane."

Again, I find in said specification the following words:

"In order to stay the rake, a diagonal rod, I, is fixed to the drag-bar B and to the rake-support F as represented."

And then follows the following quotation, viz:

"From this description it will be seen that the finger-beam, platform, and rake are entirely suspended and braced by devices which can articulate free of the draught-frame; or, in other words, these parts in articulating do not tilt the draught-frame."

Now, in comparing this language with the specification in the original patent, it will be seen that nearly all of it is injected into the reissue, without even a line of any such functions.

I further find, on comparing the two patents referred to in the question, viz. the re-issue 2224 with the or-
440 iginal 35315, that in the original patent no mention whatever is made, or even hinted at, so far as I can find, of its being

adapted for cutting grass or what is termed as a combined mower and reaper. But, on the contrary, the original specification speaks of it as a machine for harvesting grain, and shows the combination of certain devices by which such material may be harvested, so far as pertains to the delivering of the grain from the platform of the machine. And it does not mention how the said machine is to be adapted for the purposes of mowing. But in the reissued patent I find that in setting forth the nature of the invention it is styled a "machine for harvesting grain and grass," the words "and grass" being introduced into the reissue and frequently spoken of throughout the specification, as, for example, in speaking of the method of suspending the inner end of the finger-beam or platform, "little obstruction will be left by such an arrangement of the suspension devices as to catch the grass and other substances which are liable to accumulate and clog the machine." And again, in speaking of the operation of the machine, the reissued specification says:

"If it is desired to cut grass with the machine represented, the rake and platform, with the wheel 10, are removed by unscrewing the metal foot-piece 9 and detaching the link *f*. This allows the shoe of the draw-bar to rest on the ground in the customary manner, while the grain side of the machine rests upon the ordinary supporting shoe. (Not shown.) Thus both ends of the finger-beam are left free to rise and fall, to conform to undulations in the surface of the ground."

All of which quotation will be found to be new matter, and not existing in the original patent.

Q. 6. State whether or not you find in the original Hoffheins' patent of 1862, No. 35315, the combination of elements enumerated by Edward S. Renwick, complainant's expert, in his answer to question 5,
441 composing the combination recited in the said first claim—see printed copy of his deposition, page 4—and give your reasons for any opinion you may express.

A. I have made the examination and comparison called for in the question, and, as I understand the subject, I do not find in the said original patent the combination of elements enumerated by Mr. Renwick in his answer to question 5, on pages 4 and 5 of his deposition in this case, for the reason that I do not find in the said original patent any reference whatever made to the third and fourth elements of the combination of elements enumerated by Mr. Renwick in his testimony just referred to. I mean I do not find any reference in the said patent to a "finger-beam," or its relation to the platform, or the functions of which a "finger-beam" is capable or is employed; and, again, I do not find in the said original patent any mention whatever made of a "cutting apparatus, consisting of the guard-fingers and cutter-bar with its blades, the said cutting apparatus operating to sever the stalks of grain in advance of the raking platform," as stated by Mr. Renwick to be the fourth element in the combination of the first claim, as given in his testimony. Again, I do not find in the said original patent what I regard as the equivalent of such a "hinged-joint connection" as Mr. Renwick has specified in his testimony as the "sixth element" in the said combination. In other words, I do not find in the said original patent such a connection of the draught-frame with the platform as to permit the platform to "rise and descend" at its inner end relatively to the draught-frame, without disturbing its connection therewith; for the reason that if the link which suspends the inner end of the draught-frame is attached, as shown in the said original patent, the platform will be raised and descend according to the variations of the main frame—

as said link forms a point of suspension directly upon the main frame—and it is manifestly evident that, as the left-hand drive-wheel rises and falls according to the unevenness of the ground, so will the platform rise and fall with it; consequently, for these reasons, in addition to
442 those already given concerning what I find in the original patent, I do not find in the said patent three out of six of the elements enumerated by Mr. Renwick in his testimony as constituting the combination existing in the first claim of the reissued patent No. 2224.

Q. 7. Referring to Hoffheins' reissued patent No. 2224, with its interpolations and alterations, as heretofore pointed out by you, state whether or not you find in exhibit Complainant's Exhibit, Model of Defendants' Harvester, substantially the same combination of parts mentioned in said claim, as is set forth in said reissue, specification, and drawings, and give your reasons for any opinion you express.

A. I have made the comparison called for in the question, and if said claim be construed substantially as set forth in the said reissued patent, then I do not find in the model of defendant's harvester such a combination of elements as is specified in the said first claim; for the reason that, as already stated by me in previous portions of my testimony, the raking apparatus described in the said reissue, is of a peculiar construction; the arms of the rake and reel being so constructed, that when one of the arms has descended to press the grain towards the platform, and to sweep across or over the platform, the opposing arm must be turned up or raised to such a point as to clear the wheel of the machine; and the organization of the several parts of the raking apparatus is such that the motion of one arm is controlled by the motion and operation of the opposing arm of the pair; and their obliquity or inclination to each other is such that when one is sweeping across the platform, the other forms exactly an opposite angle to the axis on which they both revolve; consequently, it is essential that the support of the rakes shall be so mounted as that they can descend into the grain at the proper point in front of the cutting apparatus to press the grain towards the cutters, and to sweep across the platform in the arc of a circle, and deliver the gavels of grain at the rear of the machine and then rise up out of the way of the frame.

443 Now, in order to accomplish this result, or perform this mode of operation, it is essential that the point of vibration of the said pair of arms shall be raised to a sufficient height, and be carried over towards the frame of the machine to a sufficient distance, or so related to the frame of the machine that the descending arm shall be brought into proper relationship to the platform, while the opposite one may rise up so as to clear the frame of the machine, and consequently, this required a peculiar kind of support for the raking apparatus, and to be so located relatively to the platform and the frame of the machine that one of the arms of a pair would not interfere with the operation of the other member of the same pair.

Now, in following the plain description and drawing of the said reissued patent, that is, I mean, by leaving out such phrases "as that the raking apparatus may be mounted anywhere on the platform," and "that any kind of raking apparatus may be used," I find that the raking apparatus consisted of what may be termed diametrical arms, the centres of which constituted axis mounted upon a horizontal head, which is fastened on a vertical shaft and in such a manner that in connection with a cam and suitable segments of gearing said arms were caused to partially rotate, and having their opposite ends inclined to

the axis of rotation, one end of one of the arms would descend and sweep across the platform, while the other was carried in exactly an opposite direction with its rake-teeth turned in exactly an opposite direction, or turned up while the others were turned down. Consequently, with such an arrangement, it is manifestly necessary for the bearing point or axis of rotation of the arms to be carried up a considerable distance above the platform, and so as to reach over in a diagonal direction from the front edge of the cutter-bar to the rear edge or point of delivery of the platform, in order that the rake might be brought in sufficiently close proximity to the platform at its inner corner or next to the base of the rake-support. Consequently I find in the said

444 reissued patent shown and described, just such an arrangement of the parts, as for example, in describing the support for the rake, the reissued specification says:

"From the platform or finger-beam the support may extend in an inclined position as high as the top of the draught-frame and then take a turn over toward the centre of the said frame as represented, so as to form a support for the rake and reel, which shall be somewhat higher than the frame and between the two drive or supporting wheels."

Now, this peculiar kind of support, located in this manner, is precisely what I regard as essential to the operation of a raking apparatus constructed as I have already mentioned, and substantially as represented in the said reissued patent.

But when I turn to the model of defendants' machine, I do not find therein represented such an organization of the raking apparatus; as it is so constructed that each arm moves independent of each of the other arms, or without reference to what path the others are pursuing while one is doing its work, and therefore it is unnecessary to raise the supporting point of the rake-arms up to any considerable height, or to carry it over between the drive-wheels, as it is stated to be the case in the complainant's reissued patent 2224; and I find in said model that the supporting point, or the pivot upon which the rakes are mounted, and upon which they revolve, is located a considerable distance towards the outer shoe, and entirely beyond the outer base of the drive-wheel. In other words, it is not "between the drive-wheels" at all, nor does its organization require the axis to be so located.

Therefore, I conclude that I do not find such a sweep-rake as is described in the said reissued patent No. 2224 existing in the defendant's machine, nor such a base or support for the rake, or mounted in such a manner as to perform the functions of such a rake as referred to in the first claim of the said reissued patent.

445 Q. 8. State whether or not you find in the original Hoffheins' patent of 1862, No. 35315, the combination of elements enumerated by Edward S. Renwick, complainant's expert, in his answer to question 6, composing the combination recited in the said eighth claim—see printed copy of his deposition, beginning on page 7—and give your reason for any opinion you may express.

A. I have made the comparison called for in the question, and I do not find the combination of elements enumerated by Mr. Renwick as existing in the original patent No. 35315, for the reason that I do not find in the said original patent any description or allusion whatever to a "cutting apparatus," or any method of its construction or mode of operation, and which Mr. Renwick says in his testimony, on page 7, is composed of guard-fingers and a series of blades attached to a cutter-bar, and which he regards as one of the elements in the claim referred to in this question.

Again, I do not find in the said original patent a "hinged-joint connection" which connects the inner end of the platform with the main frame in such a manner as to allow it to conform to the undulations of the ground independent of the main frame, for the reason, already given, that said inner end of the platform is supported by a link directly attached to the main frame, and in such a position as that when the left-hand drive-wheel, or that which is near to the platform, rises and descends, the platform will rise and descend with it when the link is connected to the main frame, and when the raking apparatus is in working position upon the platform, and which, according to said testimony, constitutes a third element in the said claim.

Again, I do not find in the said original patent a definition of which one of the wheels is the inner drive-wheel of the main or draught frame, and which is referred to as the sixth element in the combination of the said claim referred to in the testimony of Mr. Renwick. Therefore, I do not find in the said original patent three of the elements out of the eight as enumerated by Mr. Renwick as constituting the combination specified in the said eighth claim in his answer to question No. 6.

446 Q. 9. Referring to Hoffheins' reissued patent No. 2224, with its interpolations and alteration, as heretofore pointed out by you, state whether or not you find in "Complainants' Exhibit Model of Defendants' Harvester," substantially the same combination of parts mentioned in said eighth claim as is set forth in said reissued specifications and drawings; and give your reasons for any opinion you may express.

A. I have made the comparison called for by the question, and if said eighth claim be construed or limited to the combination substantially as described in the said patent, then I do not find in the said defendants' machine as represented in complainants' model of defendants' machine, what I regard as substantially the same combination of elements as recited in the said eighth claim, and for the following reasons:

First. The raking-apparatus in defendants' machine, and which is one of the elements of the said eighth claim, is substantially a different kind of raking-apparatus, as already explained in my answer to question 7, from that represented in the complainants' patent.

And second. It is mounted in substantially a different manner in combination with the platform from that represented in the said patent.

And third. The several parts are so arranged that the support of the rake in the defendants' machine does not occupy the relationship to the points of suspension as specified in the said reissued patent. The difference in the raking-apparatus I have already referred to, and also the peculiar support of the raking-apparatus as being an essential element in the manner of mounting it relatively to the machine so that it can be made to operate. I have also mentioned and also quoted from the said reissued patent to justify what I have just said with reference to the location of the support for the rakes, that it must be within or between the two drive-wheels, whereas the entire organization of the parts, viz., the raking-apparatus and the standard or base of support upon

447 which it is mounted, do not have or require any such peculiar construction, owing to the difference in the construction of the raking-devices, and, therefore, I do not find in the said defendants' machine what I regard as substantially the same combination of parts or elements as specified in the said eighth claim of complainants' reissued patent.

Q. 10. State whether or not you find in the original Hoffheins patent

of 1862, No. 33315, the combination of elements enumerated by Edward S. Renwick, complainants' expert, in his answer to question 7, composing the combination recited in the said ninth claim—see printed copy of his deposition, page eleven (11)—and give your reasons for any opinion you may express.

A. I have made the comparison, and I do not find in the said original patent what I regard as equivalents or substantially equivalent devices for those referred to by Mr. Renwick in his testimony, as constituting the elements of the said ninth claim; in other words, I do not find in the original patent, or shown in the drawings, anything corresponding to a finger-beam, and therefore the first element of the said combination is wanting in the original patent.

And second, the "bracket" or "arm," which projects from the heel or inner end of the "finger-beam," which Mr. Renwick states is the eligible element of the said combination, I do not find referred to in the said original patent.

There is shown in the drawings of the said patent a projection or bracket, to which the lower end of the link H is attached, which is stated in the original specification as the device by which the inner end of the platform is suspended from the back of the main frame; but as no finger-beam is either shown or described in the said patent, this bra'ket or arm cannot possibly project from the heel or the inner end of the finger-beam; consequently, I do not find two of the elements out of the eight enumerated by Mr. Renwick, as being the elements of the said ninth claim, among the devices specified in the said original patent.

448 Q. 11. Referring to Hoffheins' reissued patent, No. 2224, with its interpolations and alterations as heretofore pointed out by you, state whether or not you find in "Complainants' Exhibit, Model of Defendants' Harvester," substantially the same combination of parts mentioned in said claim as is set forth in said reissue specification and drawings, and give your reasons for any opinion you may express.

A. I have made the comparison called for in the question, and as I understand said claim it is for the combination of several devices, and located in a peculiar manner, and substantially as described in the said specification, or, in other words, the first portion of the claim as stated therein is "a combination of a rake and reel located substantially as described, and a finger-beam and platform with the main frame," &c.

Now, for the reasons already given in my answer to question seven (7), concerning the construction of the rake and reel, and the manner in which such a rake and reel requires to be mounted on the platform of the machine, and their relative position to the main frame of the machine, I do not find in the defendants' machine, or as represented in complainants' model of defendants' machine—the combination of such a rake and reel as described in the said reissued patent, with a finger-beam and platform, or with the main frame, and without any reference to the means of attaching the several parts together, as specified in said claim.

For, as already stated, the organization of the rake in the defendants' machine is of such a character as that it does not require any peculiar kind of support to bring it into proper working relation with the main frame of the machine, and therefore the support of the rake need not be between the drive-wheels, as is specified in the said reissued patent, but the raking apparatus in the defendants' machine is entirely outside of the drive-wheels, and may be, by its very organiza-

Again, I do not find in the said original patent a "hinged-joint connection" which connects the inner end of the platform with the main frame in such a manner as to allow it to conform to the undulations of the ground independent of the main frame, for the reason, already given, that said inner end of the platform is supported by a link directly attached to the main frame, and in such a position as that when the left-hand drive-wheel, or that which is near to the platform, rises and descends, the platform will rise and descend with it when the link is connected to the main frame, and when the raking apparatus is in working position upon the platform, and which, according to said testimony, constitutes a third element in the said claim.

Again, I do not find in the said original patent a definition of which one of the wheels is the inner drive-wheel of the main or draught frame, and which is referred to as the sixth element in the combination of the said claim referred to in the testimony of Mr. Renwick. Therefore, I do not find in the said original patent three of the elements out of the eight as enumerated by Mr. Renwick as constituting the combination specified in the said eighth claim in his answer to question No. 6.

446 Q. 9. Referring to Hoffheins' reissued patent No. 2224, with its interpolations and alteration, as heretofore pointed out by you, state whether or not you find in "Complainants' Exhibit Model of Defendants' Harvester," substantially the same combination of parts mentioned in said eighth claim as is set forth in said reissued specifications and drawings; and give your reasons for any opinion you may express.

A. I have made the comparison called for by the question, and if said eighth claim be construed or limited to the combination substantially as described in the said patent, then I do not find in the said defendants' machine as represented in complainants' model of defendants' machine, what I regard as substantially the same combination of elements as recited in the said eighth claim, and for the following reasons:

First. The raking-apparatus in defendants' machine, and which is one of the elements of the said eighth claim, is substantially a different kind of raking-apparatus, as already explained in my answer to question 7, from that represented in the complainants' patent.

And second. It is mounted in substantially a different manner in combination with the platform from that represented in the said patent.

And third. The several parts are so arranged that the support of the rake in the defendants' machine does not occupy the relationship to the points of suspension as specified in the said reissued patent. The difference in the raking-apparatus I have already referred to, and also the peculiar support of the raking-apparatus as being an essential element in the manner of mounting it relatively to the machine so that it can be made to operate. I have also mentioned and also quoted from the said reissued patent to justify what I have just said with reference to the location of the support for the rakes, that it must be within or between the two drive-wheels, whereas the entire organization of the parts, viz.,

447 the raking-apparatus and the standard or base of support upon which it is mounted, do not have or require any such peculiar construction, owing to the difference in the construction of the raking-devices, and, therefore, I do not find in the said defendants' machine what I regard as substantially the same combination of parts or elements as specified in the said eighth claim of complainants' reissued patent.

Q. 10. State whether or not you find in the original Hoffheins patent

of 1862, No. 33315, the combination of elements enumerated by Edward S. Renwick, complainants' expert, in his answer to question 7, composing the combination recited in the said ninth claim—see printed copy of his deposition, page eleven (11)—and give your reasons for any opinion you may express.

A. I have made the comparison, and I do not find in the said original patent what I regard as equivalents or substantially equivalent devices for those referred to by Mr. Renwick in his testimony, as constituting the elements of the said ninth claim; in other words, I do not find in the original patent, or shown in the drawings, anything corresponding to a finger-beam, and therefore the first element of the said combination is wanting in the original patent.

And second, the "bracket" or "arm," which projects from the heel or inner end of the "finger-beam," which Mr. Renwick states is the eligible element of the said combination, I do not find referred to in the said original patent.

There is shown in the drawings of the said patent a projection or bracket, to which the lower end of the link H is attached, which is stated in the original specification as the device by which the inner end of the platform is suspended from the back of the main frame; but as no finger-beam is either shown or described in the said patent, this bra'ket or arm cannot possibly project from the heel or the inner end of the finger-beam; consequently, I do not find two of the elements out of the eight enumerated by Mr. Renwick, as being the elements of the said ninth claim, among the devices specified in the said original patent.

448 Q. 11. Referring to Hoffheins' reissued patent, No. 2224, with its interpolations and alterations as heretofore pointed out by you, state whether or not you find in "Complainants' Exhibit, Model of Defendants' Harvester," substantially the same combination of parts mentioned in said claim as is set forth in said reissue specification and drawings, and give your reasons for any opinion you may express.

A. I have made the comparison called for in the question, and as I understand said claim it is for the combination of several devices, and located in a peculiar manner, and substantially as described in the said specification, or, in other words, the first portion of the claim as stated therein is "a combination of a rake and reel located substantially as described, and a finger-beam and platform with the main frame," &c.

Now, for the reasons already given in my answer to question seven (7), concerning the construction of the rake and reel, and the manner in which such a rake and reel requires to be mounted on the platform of the machine, and their relative position to the main frame of the machine, I do not find in the defendants' machine, or as represented in complainants' model of defendants' machine—the combination of such a rake and reel as described in the said reissued patent, with a finger-beam and platform, or with the main frame, and without any reference to the means of attaching the several parts together, as specified in said claim.

For, as already stated, the organization of the rake in the defendants' machine is of such a character as that it does not require any peculiar kind of support to bring it into proper working relation with the main frame of the machine, and therefore the support of the rake need not be between the drive-wheels, as is specified in the said reissued patent, but the raking apparatus in the defendants' machine is entirely outside of the drive-wheels, and may be, by its very organiza-

tion, removed any distance desired from the main frame of the machine; consequently I do not regard the location of the defendants' rake and reel as being embraced within any substantial description of the
449 location specified in complainant's reissued patent No. 2224, and referred to in the ninth claim thereof.

Q. 12. State whether or not you find in the original "Hoffheins Patent of 1862, No. 35315," the combination of elements enumerated by Edward S. Renwick, complainants' expert, in his answer to question eight (8), composing the combination recited in the said eleventh (11) claim—see printed copy of his deposition, page fifteen (15)—and give your reasons for any opinion you may express.

A. I have made the comparison called for in the question, and as I understand the subject, I do not find all of the elements enumerated by Mr. Renwick in his answer to said question, set forth in the said original patent; in other words, I do not find in the said original patent, either shown or described, any "cutting apparatus" which is mentioned in the said testimony as the second element of the combination therein enumerated.

And second, I do not find in the said original patent any description of a "hinged-joint connection" "connected at one end" "with the draught-frame of the machine," and connected at the other end by another hinged joint with the inner end of the "cutting apparatus."

I repeat that I do not find such a "hinged-joint" connection, as there is no "cutting apparatus" shown or described, or its mode of attachment with the machine shown or described in the said original patent, having any "hinged-joint" connection; therefore, I do not find the third element of the said combination in the said original patent.

Again, for the reason that there is neither "finger-beam" or "cutting apparatus," either shown or described in the said original patent, I do not find any "suspension device" in connection therewith or projecting therefrom, which device is stated by Mr. Renwick as being the fifth element in the said combination.

And therefore I do not find in the said original patent three of the elements of the five stated by Mr. Renwick as constituting the combination of devices embraced in the said eleventh claim.

450 Q. 13. Referring to Hoffheins' reissued patent, No. 2224, with its interpolations and alterations, as heretofore pointed out by you, state whether or not you find in exhibit "Complainants' Exhibit Model of Defendants' Harvester," substantially the same combination of parts mentioned in said claim, as is set forth in said reissue, specification, and drawings, and give your reasons for any opinion you may express.

Adjourned to Monday, October 8th, at 10 a. m.

OCTOBER 8TH, 1877.

Meeting held pursuant to adjournment, at No. 900 Chestnut street.

Present, R. Hoffheins, complainant, and S. A. Bowman, esq., his counsel; Geo. Harding, esq., counsel for defendants.

J. BOYD ELIOT resumes, in answer to Q. 13.

A. I have made the comparison called for in the question, and as I understand the organization of a machine, having parts in combination substantially such as is described in said reissued patent, and as involved in the said eleventh claim, I do not find in the defendants' machine the combination of such parts as are necessary to perform the functions stated in said claim, viz, "Preventing a too sudden or abrupt

deflection of a rake and reel, mounted upon a hinged-joint cutting apparatus," as set forth in the said reissued patent.

My reasons for such an opinion are, that, as already stated by me, the organization of the raking apparatus in the defendants' machine is substantially different from that in the said reissued patent; and the location of the axis upon which the rake revolves instead of being between the drive-wheels is a considerable distance to the right-hand side or face of the right-hand wheel of the machine, and therefore the point of suspension with the main frame of the machine does not require any particular location in order that as the platform varies
451 in its vertical movement it shall be so related to the main frame as to prevent the rakes from coming in contact therewith or with the drive-wheels of the machine.

Now the point of suspension to the main frame is shown in the said reissued patent, and referred to in the description, is as nearly as may be, under the axis of the rake, or the axis upon which the rake-arms revolve in sweeping across the platform, and said point is located near the centre of the drive-wheel next to the cutting apparatus, and is, in my opinion, just about the worst point for said attachment to be located, in connection with the main frame of the machine, that could be given to it, in order to prevent "a too sudden or abrupt deflection of the rake and reel," for the reason, as already stated by me in a previous portion of my testimony, that the inner end of the platform is supported and carried, when at work in cutting grain as a harvester, directly upon the main frame, and consequently, is subject to all the vertical motions that the drive-wheel next to the inner end of the cutting apparatus and platform may have; consequently, if the suspension is made to the main frame in the pathway of the inner drive-wheel, any sudden vibration whatever of the said wheel, a rising or falling action thereof, will be immediately communicated to inner end of the cutting apparatus, or the end next to the said wheel, and this motion will take place whether the inner end of the cutting apparatus has met with the said cause of deflection or elevation or not.

Now, in the defendants' machine the organization and arrangement of the parts are such that all that is required in the way of suspending the platform, is to raise it to a proper height at its inner end to correspond with the same elevation made at its outer end by the castor-wheel on which it is supported; that is, I mean, when the machine is on a level position; and this is accomplished in the defendants' machine by extending an arm from the finger-bar, or inner-shoe, out to a line or point about opposite the centre of the main frame, and there suspending it by a chain to a hook on the frame, in such a manner that its weight—that is, the weight of the cutting apparatus and rake and inner portion of the platform—is transferred nearly to the
452 central point of suspension between the drive-wheels, and without any reference whatever to the construction or organization of the raking apparatus.

In other words, the organization of the defendants' machine, so far as it pertains to the subject-matter of said eleventh claim, consists in extending the finger-beam of the machine, or a piece that would correspond to an extension thereof, out as far as to the centre of the main frame, or nearly so, and there suspending it in such a manner as to vibrate upon the said central attachment and without reference to the pivotal connection at the inner end of the cutting apparatus. In other words, the said pivotal connection at the inner end of the cutting ap-

paratus is completely gagged, or its function destroyed, by hanging up the inner end of the finger-bar upon a central point on the main frame of the machine. Consequently, I conclude that as the raking apparatus, in its organization and its location, and the point of attachment of the finger-bar with the main frame, are substantially different from the corresponding several parts in the complainants' reissued patent, that therefore I do not find in the defendants' machine the combination specified in the said eleventh claim of complainants' reissued patent.

Q. 14. State whether or not you find in the original Hoffheins' patent of 1862, No. 35315, the combination of elements enumerated by Edward S. Renwick, complainants' expert, in his answer to question nine (9), composing the combination recited in the said twelfth (12) claim, see printed copy of his deposition, page seventeen (17), and give your reason for any opinion you may express.

A. I have made the comparison called for in the question, and, as I understand the subject, I do not find in the said original patent all of the elements as specified by Mr. Renwick in his testimony, as referred to in the question—that is, I do not find in the said original patent what I regard as either the second or sixth of the elements given by him as constituting the subject-matter of the said twelfth claim, for the reason that I do not find, as already stated by me, any mention
453 made whatever of the finger-beam in said original specification, and therefore there cannot be the "finger-joint" connection mentioned as the sixth element in the said testimony, and therefore I do not find all of the elements referred to in said combination in the said original patent.

Q. 15. Referring to Hoffheins' reissued patent No. 2224, with its interpolations and alterations as heretofore pointed out by you, state whether or not you find in exhibit Complainants' Exhibit Model of Defendants' Harvester, substantially the same combination of parts mentioned in said claim as is set forth in said reissue specifications and drawings, and give your reasons for any opinion you may express.

A. I have made the comparison called for in the question, and, as I understand the subject, if said twelfth claim be construed to embrace elements substantially as described in the said reissued patent, then I do not find in the said defendants' machine substantially such a combination as specified in said twelfth claim, for the reason already given by me, that the organization of the raking apparatus described in the said reissued patent is substantially a different organization from that represented in the defendants' machine; and again, the said raking apparatus in the defendants' machine is not so mounted either upon the platform or the finger-beam, as "to rise and fall therewith independently of the draught-frame," for the reason, as already stated by me, that the finger-beam and the platform rise and fall at their inner end, according to the rising and falling of the portion of the main frame to which they are suspended. Consequently, I do not find in the defendants' machine substantially the same combination of devices as specified in said twelfth claim of complainant's reissued patent.

Q. 16. State whether or not you find in the original Hoffheins' patent of 1862, No. 35315, the combination of elements enumerated by Edward S. Renwick, complainants' expert, in his answer to question ten (10), composing the combination recited in the said fourteenth (14) claim; see printed copy of his deposition, page twenty (20), and give your reasons for any opinion you may express.

454 A. I have made the comparison called for in the question, and I do not find in the said original patent all of the elements

enumerated by Mr. Renwick as constituting the devices embraced within the said fourteenth claim. In other words, I do not find any mention in said original patent of a finger-beam to which the cutting apparatus is secured, as stated by Mr. Renwick, as constituting the fifth element in the said combination, and there is not in the said original patent any description of a cutting apparatus, nor is any device shown or described therein to which it may be attached or secured; and this cutting apparatus constitutes the second element enumerated by Mr. Renwick in the said combination. Again, I do not find in the said original patent the "hinge-joint connection, by which the cutting apparatus is connected with the main frame, and which has its hinged pivot at the inner end of the cutting apparatus," and which is stated by Mr. Renwick to be the third element in the said combination. Therefore, I do not find in said original patent three of the seven elements enumerated by Mr. Renwick in his answer to the said question.

Q. 17. Referring to Hoffheins' reissued patent No. 2224, with its interpolations and alterations as heretofore pointed out by you, state whether or not you find in "Complainants' Exhibit Model of Defendants' Harvester," substantially the same combination of parts mentioned in said claim as is set forth in said reissue, specifications, and drawings, and give your reasons for any opinion you may express.

A. I have made the comparison called for in the question, and if said claim be limited in its construction to the devices in combination "substantially as and for the purpose described," which are the closing words of the said fourteenth claim, then I do not find in the defendants' machine such a combination "of a suspended hinged-joint cutting apparatus," with such "a combined rake and reel," as is described in the said reissued patent, and I need not give any reasons for such opinion, as I have already, in my previous answers, explained
455 what I understand to be the substantial differences between the raking apparatus of the defendants' machine, and the method of suspending the same, or mounting it relatively to the main frame of the machine; and the devices shown and described in complainants' reissued patent.

Q. 18. State whether or not you find in the original Hoffheins' patent of 1862, No. 35315, the combination of elements enumerated by Edward S. Renwick, complainants' expert, in his answer to question eleven (11), composing the combination recited in the said sixteenth (16) claim—see printed copy of his deposition, page twenty-three (23)—and give your reasons for any opinion you may express.

A. I have made the comparison called for in the question, and I do not find in the said original patent the second element enumerated by Mr. Renwick in his answer to said question, viz, the "cutting apparatus of the machine," "secured to the finger-beam," as stated by him in the testimony referred to; for the reason that no mention is made in said original patent of any "finger-beam," nor is any mention made therein of securing a "cutting apparatus" to a "finger-beam." Consequently, I do not find in said original patent all of the elements enumerated in the said combination. I may also add, that according to the said testimony, in which a "hinge-joint connection" connects a "cutting apparatus" with the main frame of the machine, I do not find such a connection set forth in the said original patent, as stated by Mr. Renwick to be the third element in the said combination, and therefore, I do not find, according to his testimony, either the second or third elements of the five, as enumerated by him as constituting the combination set forth in the said sixteenth claim.

paratus is completely gagged, or its function destroyed, by hanging up the inner end of the finger-bar upon a central point on the main frame of the machine. Consequently, I conclude that as the raking apparatus, in its organization and its location, and the point of attachment of the finger-bar with the main frame, are substantially different from the corresponding several parts in the complainants' reissued patent, that therefore I do not find in the defendants' machine the combination specified in the said eleventh claim of complainants' reissued patent.

Q. 14. State whether or not you find in the original Hoffheins' patent of 1862, No. 35315, the combination of elements enumerated by Edward S. Renwick, complainants' expert, in his answer to question nine (9), composing the combination recited in the said twelfth (12) claim, see printed copy of his deposition, page seventeen (17), and give your reason for any opinion you may express.

A. I have made the comparison called for in the question, and, as I understand the subject, I do not find in the said original patent all of the elements as specified by Mr. Renwick in his testimony, as referred to in the question—that is, I do not find in the said original patent what I regard as either the second or sixth of the elements given by him as constituting the subject-matter of the said twelfth claim, for the reason that I do not find, as already stated by me, any mention
453 made whatever of the finger-beam in said original specification, and therefore there cannot be the "finger-joint" connection mentioned as the sixth element in the said testimony, and therefore I do not find all of the elements referred to in said combination in the said original patent.

Q. 15. Referring to Hoffheins' reissued patent No. 2224, with its interpolations and alterations as heretofore pointed out by you, state whether or not you find in exhibit Complainants' Exhibit Model of Defendants' Harvester, substantially the same combination of parts mentioned in said claim as is set forth in said reissue specifications and drawings, and give your reasons for any opinion you may express.

A. I have made the comparison called for in the question, and, as I understand the subject, if said twelfth claim be construed to embrace elements substantially as described in the said reissued patent, then I do not find in the said defendants' machine substantially such a combination as specified in said twelfth claim, for the reason already given by me, that the organization of the raking apparatus described in the said reissued patent is substantially a different organization from that represented in the defendants' machine; and again, the said raking apparatus in the defendants' machine is not so mounted either upon the platform or the finger-beam, as "to rise and fall therewith independently of the draught-frame," for the reason, as already stated by me, that the finger-beam and the platform rise and fall at their inner end, according to the rising and falling of the portion of the main frame to which they are suspended. Consequently, I do not find in the defendants' machine substantially the same combination of devices as specified in said twelfth claim of complainant's reissued patent.

Q. 16. State whether or not you find in the original Hoffheins' patent of 1862, No. 35315, the combination of elements enumerated by Edward S. Renwick, complainants' expert, in his answer to question ten (10), composing the combination recited in the said fourteenth (14) claim; see printed copy of his deposition, page twenty (20), and give your reasons for any opinion you may express.

454 A. I have made the comparison called for in the question, and I do not find in the said original patent all of the elements

enumerated by Mr. Renwick as constituting the devices embraced within the said fourteenth claim. In other words, I do not find any mention in said original patent of a finger-beam to which the cutting apparatus is secured, as stated by Mr. Renwick, as constituting the fifth element in the said combination, and there is not in the said original patent any description of a cutting apparatus, nor is any device shown or described therein to which it may be attached or secured; and this cutting apparatus constitutes the second element enumerated by Mr. Renwick in the said combination. Again, I do not find in the said original patent the "hinge-joint connection, by which the cutting apparatus is connected with the main frame, and which has its hinged pivot at the inner end of the cutting apparatus," and which is stated by Mr. Renwick to be the third element in the said combination. Therefore, I do not find in said original patent three of the seven elements enumerated by Mr. Renwick in his answer to the said question.

Q. 17. Referring to Hoffheins' reissued patent No. 2224, with its interpolations and alterations as heretofore pointed out by you, state whether or not you find in "Complainants' Exhibit Model of Defendants' Harvester," substantially the same combination of parts mentioned in said claim as is set forth in said reissue, specifications, and drawings, and give your reasons for any opinion you may express.

A. I have made the comparison called for in the question, and if said claim be limited in its construction to the devices in combination "substantially as and for the purpose described," which are the closing words of the said fourteenth claim, then I do not find in the defendants' machine such a combination "of a suspended hinged-joint cutting apparatus," with such "a combined rake and reel," as is described in the said reissued patent, and I need not give any reasons for such opinion, as I have already, in my previous answers, explained
455 what I understand to be the substantial differences between the raking apparatus of the defendants' machine, and the method of suspending the same, or mounting it relatively to the main frame of the machine; and the devices shown and described in complainants' reissued patent.

Q. 18. State whether or not you find in the original Hoffheins' patent of 1862, No. 35315, the combination of elements enumerated by Edward S. Renwick, complainants' expert, in his answer to question eleven (11), composing the combination recited in the said sixteenth (16) claim—see printed copy of his deposition, page twenty-three (23)—and give your reasons for any opinion you may express.

A. I have made the comparison called for in the question, and I do not find in the said original patent the second element enumerated by Mr. Renwick in his answer to said question, viz, the "cutting apparatus of the machine," "secured to the finger-beam," as stated by him in the testimony referred to; for the reason that no mention is made in said original patent of any "finger-beam," nor is any mention made therein of securing a "cutting apparatus" to a "finger-beam." Consequently, I do not find in said original patent all of the elements enumerated in the said combination. I may also add, that according to the said testimony, in which a "hinge-joint connection" connects a "cutting apparatus" with the main frame of the machine, I do not find such a connection set forth in the said original patent, as stated by Mr. Renwick to be the third element in the said combination, and therefore, I do not find, according to his testimony, either the second or third elements of the five, as enumerated by him as constituting the combination set forth in the said sixteenth claim.

Q. 19. Referring to Hoffheins' reissued patent No. 2224, with its interpolations and alterations, as heretofore pointed out by you, state whether or not you find in exhibit "Complainants' Exhibit Model of Defendants' Harvesters," substantially the same combination of parts mentioned in said claim, as is set forth in said reissue, specifica-
456 tions, and drawings, and give your reasons for any opinion you may express.

A. I have made the comparison called for in the question, and I do not find in the defendants' machine such a combination of devices as is specified in the said sixteenth claim of the complainants' reissued patent, if the said claim is construed "substantially as and for the purposes described," which last quotation constitutes the closing words of the said claim.

My reasons for such an opinion are those which I have already given concerning the construction of the "combined rake and reel," and the "hinge-joint connection;" and in addition thereto, I do not find in the defendants' machine any device which I regard as a "belt-tightener," or a device which performs the function of tightening a belt on the said defendants' machine.

That device which communicates motion from the main axle to the raking apparatus, is an old and well known form of chain-belt, formed of square, open links, connected by loops of metal between the opposite ends of the links, and the said links are arranged to run over what are termed "sprocket-wheels," which have projections or teeth on them that correspond to the openings in the said links of the chain, and which serve to prevent the chain from slipping on the said wheels, and therefore, in such an arrangement there is no necessity whatever of a "belt-tightener," as the several links of the chain engage positively with the teeth on the sprocket-wheels, and by such an arrangement any degree of slackness may be permitted in the chain without interfering with its driving action.

Now, in the device which is attached to the front side of the support of the raking apparatus, and which holds up the under side of the said chain-belt by a yielding pressure, its only function is to serve as a guide to the slack side of the said chain-belt, in order that the teeth of the sprock't-wheels may readily enter the open links of the chain.

If a belt, such as is shown and described in the complainants patent-reissue No. 2224, were placed in such a position, it could not, in
457 my opinion, possibly be made to drive the raking apparatus, or work as a proper substitute, or in any practical manner in raking grain from the platform of a harvester, and therefore cannot, in my opinion, be considered as the equivalent of the chain and sprocket-wheels represented in defendants' machine; consequently I do not find in the said defendants' machine the combination of elements described in the complainant's reissued patent 2224, and referred to in the sixteenth claim thereof.

Q. 20. State whether or not you find in the original Hoffheins' patent of 1862, No. 35315, the combination of elements enumerated by Edward S. Renwick, complainants' expert, in his answer to question twelve (12), composing the combination recited in the said nineteenth (19) claim—see printed copy of his deposition, page twenty-five (25), and give your reasons for any opinion you may express.

A. I have made the comparison called for in the question, and I do not find in the said original patent all of the elements of the combination as enumerated in the testimony referred to in the question, For example, I do not find in the said original patent the second element

therein enumerated, viz, the "finger-beam to which the cutting-apparatus is secured."

And again I do not find in said original patent "the hinge-connection by means of which the finger-beam is connected with the draught-frame;" and therefore I do not find in said original patent the second and fourth elements or devices mentioned by Mr. Renwick as constituting members of the combination specified in the said nineteenth claim as referred to in his testimony.

Q. 21. Referring to Hoffheins' reissued patent No. 2224, with its interpolations and alterations as heretofor' pointed out by you, state whether or not you find in exhibit "Complainants' Exhibit Model of Defendants' Harvester" substantially the same combination of parts mentioned in said claim as is set forth in said reissue, specification, and drawings, and give your reasons for any opinion you may express.

A. I have made the comparison called for in the question, and
458 I do not find in the defendants' machine the substantial equivalents or devices as specified in said reissued patent, and referred to in the nineteenth claim thereof; for the reason, as already stated by me, I regard the element of the rake as substantially different, and the means of driving said rake as substantially different; and also that the rake and the platform in the defendants' machine do not move independently of the draught-frame of the machine.

Of course this view of the combination, as I understand it, is based upon the supposition that the said claim will be construed "substantially as described, and for the purpose set forth," which are the closing words of said claim.

Q. 22. Have you examined and do you understand the original letters patent of Reuben Hoffheins, No. 40481, dated November 3d, 1863, for improvements in harvesters, and have you examined the certified copy of the model marked "Complainant's Exhibit, Patent-Office Model of the Original Patent," and have you also examined the reissued letters patent of R. Hoffheins, No. 2490, dated February 19th, 1867, and do you understand each of them?

A. I have examined the several exhibits referred to in the question, and believe that I understand each of them.

Q. 23. Please refer to the original and also to the reissued letters patent mentioned in the last preceding question, and state whether the said reissue describes and claims the same invention, and point out wherein the said reissue has been changed or modified from said original patent? In giving your answer,-please also refer to the original model above mentioned.

(Question objected to by Mr. Bowman as incompetent.)

A. In making the comparison called for by the question, I find that the prominent points of difference between the original patent and the said reissue consist in the combinations in which the driver's seat on the machine is involved.

459 In the original patent I do not find any mention made of the driver's seat, except in the last line of the descriptive portion of the specification, in which it says "W represents the driver's seat." I mean by the descriptive portion all that part of the specification which refers to the devices used in the construction of the machine, and that portion of the specification which is for the description of its operation.

Now, in turning to the reissued patent No. 2490 I find that the recital of it mentioned, as set forth in the said reissue, appears in the first part of the specification in the following words:

"My first improvement consists in the combination, in a two-wheel hinged-joint machine, of a driver's seat, mounted upon the main frame, with the raking mechanism mounted upon the finger-beam and rotating on a vertical axis, or one nearly so, substantially as hereinafter described, for the purpose of enabling the driver to ride upon the machine while the rake is in operation."

From which language it is manifestly evident that the location of the driver's seat upon the main frame of the machine, in combination with the raking mechanism, constitutes the first essential feature of invention in the said reissued patent, for the reason that the function of said combination is "for the purpose of enabling the driver to ride upon the machine while the rake is in operation."

All of which combination is, in my opinion, new matter, except what may be gathered from the drawings and the words above quoted by me, viz: "W represents the driver's seat."

Again, I find in the said reissued patent, after describing the construction of the rake or reel arms and the angles which they form relative to each other, the following language:

"By this means the rake and reel arms will stand high enough above the draught-frame on the inner side of the machine to move clear
460 of the driver, who sits on the machine in a seat, W, which is mounted upon the main frame, as shown, or in any other position on the frame that will give the greatest convenience and advantage from his weight and use of his hands in the management of the machine."

Now, in my opinion, this entire quotation is new matter and unauthorized by anything found in the original specification, for the reason that anything shown in the drawings, or in the model of the said original patent, or in the description of said original patent, will not permit any such combination or arrangement of the parts, or the raking apparatus, with the driver's seat to be maintained.

Again, I find in the said reissued specification, after describing the various devices of the machine, the following language concerning the combination of the said several devices:

"From the foregoing description it will be seen that my invention enables me to combine in a self-raking harvester all the advantages derived from the two-wheeled hinged-joint machine, and still use a rake that turns about an axis, or revolves entirely around the same, and at the same time have the driver or manager ride upon the main or draught frame in such a position that his weight may aid in counterbalancing the weight of the rake and platform, and his hands may be conveniently employed for control'ing the machine."

Now, in so far as any function whatever can arise from the weight of the driver "in counter-balancing the weight of the rake and platform," I regard it as a matter of absolute impossibility that any such result can be produced by anything shown or described either in the drawings or in the original specification referred to in the question, and therefore I regard the said quotation as new matter and the functions as stated therein as an absurdity.

461 I also find in the said reissued patent No. 2490 that the driver's seat is involved in some of the claims of the said reissue in a manner wholly unauthorized, in my opinion, from anything set forth in the said original patent.

Adjourned to meet Tuesday, October 9th, 1877, at 10 a. m.

OCTOBER 9TH, 1877—10 a. m.

Meeting held pursuant to adjournment.

Parties present.

Mr. ELIOT resumes:

Q. 24. State whether or not you find in the original Hoffheins' patent of 1863, No. 40481, the combination of elements enumerated by Edward S. Renwick, complainant's expert, in his answer to question thirteen (13), composing the combination recited in the said first claim—see printed copy of his deposition, page twenty-eight (28)—and give your reason for any opinion you may express.

A. I have made the comparison called for in the question, and I do not find in the said original patent, either shown or described, all of the elements mentioned in said combination in such relationship to each other as to perform the functions attributed to them by Mr. Renwick in his testimony concerning the said claim.

It is true there is a driver's seat mounted upon the said main frame, but it is not in such a position on said frame, nor can it, in my opinion, be so placed in any position on the frame described in said patent, by which the driver of the machine can ride upon the seat while the rake is in operation; therefore, I do not find in the said original patent the second element enumerated by Mr. Renwick as existing in the combination referred to in his testimony.

462 Q. 25. Referring to Hoffheins reissued patent No. 2490, with its interpolations and alterations as heretofore pointed out by you, state whether or not you find in exhibit "Complainants' Exhibit, Model of Defendants' Harvester," substantially the same combination of parts mentioned in said claim as is set forth in the said reissue, specification, and drawings, and give your reasons for any opinion you may express.

A. I have made the comparison called for in the question, and as I understand the subject, I do not find in the said defendants' machine the combination specified in the said reissued patent and referred to in the first claim thereof, provided said claim be construed to embrace the combination substantially as described in the said reissued patent.

My reasons for this opinion are that the raking apparatus represented in the defendant's machine is substantially different from that shown or described in the said reissued patent, and the difference is so material that if the raking apparatus described in the said reissued patent were substituted for that represented in the defendants' machine or model thereof, it would not be possible for the driver's seat, located anywhere on the frame of defendants' machine as it is constructed, to permit any one to ride thereon while the rake was in operation.

The same differences in the raking apparatus, which I have already referred to as existing between the defendant's machine and the reissued patent No. 2224 of the complainants, also exist between the said machine and this reissue No. 2490, as the raking apparatus is substantially the same in both patents.

The specification of the reissued patent No. 2490 says:

"The rake-arms form an angle with the shaft *v*, the inclinations of one arm of each pair being just in a converse direction of the other, so that when one rake or reel arm is over and down close to the platform the others will be at a very high position on the inner side of the machine."

463 Now, such a construction of the rake, if applied upon the sup-

port or standard in the defendant's machine, or if applied upon one so high as to be impracticable as an operative device when mounted upon the platform of the machine, would not permit a driver to ride upon a seat when located anywhere on the main frame of the said machine.

The said specifications, after giving the foregoing description of the rake-arms says:

"By this means the rake and reel arms will stand high enough above the draught-frame on the inner side of the machine to move clear of the driver, who sits upon the machine in a seat, W, which is mounted upon the main frame, as shown, or in any other position on the frame that will give the greatest convenience and advantage from his weight and use of his hands in the management of the machine."

Now, the seat shown in the drawings of the said reissue is mounted on a portion of the frame which extends to the rear of the main axle, and the seat itself is shown as placed to the rear of said axle, and consequently a driver located upon said seat would add his weight upon the same side of the main axle that the raking apparatus is mounted, and, consequently, in place of their being any advantage "in such a position that his weight may aid in counterbalancing the weight of the rake and platform," as stated in the said reissued patent, it is directly the opposite.

Again, I cannot conceive it possible that there can be any mechanical combination between a driver's seat and a raking apparatus of a harvester machine than that which is due to the counterbalancing weight of the seat and the driver thereon.

464 Again, the main frame of the machine represented in reissue 2490 is of a peculiar construction, and is described in the following language:

"The main frame A A, represented in Fig. 4, is cast in one piece, in the form represented, the ends being left disconnected to facilitate moulding and to reduce the weight."

Now, in turning to Fig. 4 of the said reissued patent I find that the right-hand side of the main frame terminates at the end of the cap that forms the box for the main gear-shaft, and therefore there is no place in front of the axle of the main gear-shaft on said machine to mount a driver's seat, except on the left-hand side, or next to the left-hand drive-wheel.

It is true a projection might be bolted onto the piece of the main frame that supports the said main gear-axle, and the seat might be projected forward in front of the right-hand drive-wheel, so that a driver might be mounted on the seat sufficiently far forward to be out of the way of the rake-arms, but such a location is neither shown or described in the said reissue, and any other position on the machine would make a structure impossible for a man to ride upon the machine while the raking apparatus was in operation.

Now, in defendants' machine, as represented in the model, the organization of the raking mechanism is such that the rake and reel arms operate entirely independent of each other, and the arrangement is such that as soon as the rake has completed its operation of delivering the grain from the platform, it is caused to rise in nearly a vertical direction as it passes the corner of the main frame of the machine, and consequently if the driver's seat be located to the front of the main axle, or in directly the opposite position to that shown in the reissued patent 2490, a person may ride on the seat without danger of being struck by the rake, and will also add his weight in counterbalancing

the rake and the platform. But, inasmuch as no such organization of raking mechanism is shown or described in complainants' patent,
465 or any such arrangement of seat relatively thereto, I do not find in the defendants' machine what I regard as substantially the same combination as specified in the said reissued patent, and referred to in the first claim thereof; I may also add that the said claim of the reissued patent No. 2490 requires, as I understand it, that the raking mechanism be mounted upon the finger-beam, but such a construction is neither shown or described in the said reissued patent, neither is it represented in the model. The specification says:

"On the inner side of the grain platform near the heel of the finger-beam is firmly mounted a post, R, which may incline over toward the main frame, as shown in Fig. 1. The said post is braced by stay-rods *r r r*, the respective lower ends of which may be bolted to the platform, the front of the shoe H, and the outer end of the rigid arm I^1, so as to secure the post in rigid connection with the platform."

From which language it is plainly evident to my mind, and also from an examination of the model and drawings, that the said raking mechanism is not mounted upon the finger-beam of the machine, whereas in the defendants' machine the raking apparatus is mounted directly upon the casting which forms the inner end of the finger-beam and the shoe, or that portion which corresponds to the inner shoe. Therefore, for this reason I would again say that if said claim be constructed to the combination of devices substantially as described in the said reissued patent, I do not find such a combination represented in defendants' machine.

Q. 26. State whether or not you find in the original Hoffheins patent of 1863, No. 40481, the combination of elements enumerated by Edward S. Renwick, complainants' expert, in his answer to question fourteen (14), composing the combination recited in the said second claim—see printed copy of his deposition, page twenty-nine (29)—and give your reasons for any opinion you may express.

466 A. I have made the comparison called for in the question, and I believe that I do find in the said original patent all of the elements as enumerated by Mr. Renwick in his answer to the said question.

Q. 27. Referring to Hoffheins' reissued patent, No. 2490, with its interpolations and alterations as heretofore pointed out by you, state whether or not you find in exhibit "Complainants' Exhibit, Model of Defendants' Harvester," substantially the same combination of parts mentioned in said claim as is set forth in said reissue specification and drawings, and give your reasons for any opinion you may express?

A. I have made the comparison called for in the question, and for the reasons already given in my previous answers, concerning the construction of the raking apparatus and its peculiar method of mounting it upon the platform, I do not find in the said defendants' machine what I regard as substantially the same combination of devices as specified in complainants' reissued patent, and referred to in the second claim thereof.

Q. 28. State whether or not you find in the original Hoffheins patent of 1863, No. 40481, the combination of elements enumerated by Edward S. Renwick, complainants' expert, in his answer to question fifteen (15), composing the combination recited in the said sixth (6) claim—see printed copy of his deposition, page thirty-three—give your reasons for any opinion you may express.

A. I have made the comparison called for in the question, and I be-

lieve that I do find the same devices in the said original patent as enumerated by Mr. Renwick in his *and* answer to said question.

Q. 29. Referring to Hoffheins' reissued patent, No. 2490, with its interpolations and alterations as heretofore pointed out by you, state whether or not you find in exhibit "Complainants' Exhibit, Model of Defendants' Harvester," substantially the same combination of parts mentioned in said claim as is set forth in said reissue specification and drawings, and give your reasons for any opinion you may express.

467 A. I have made the comparison called for in the question, and I do not find in defendants' machine what I regard as substantially the same or equivalent devices, as specified in the said reissued patent and referred to in the sixth claim thereof; for the reason, in addition to those already given by me, concerning the revolving rake and reel, as being substantially different in their structure and mode of operation, I do not regard the driving device, viz, the chain-belt in the defendants' machine, as the mechanical equivalent to what is well known in the arts as a tumbling-shaft, and which is substantially the device shown and described in complainants' reissued patent.

It is true that both devices are used for communicating motion from one shaft to another, but here their resemblance to each other ceases. The chain-belt, when formed of links, as represented in the model of defendants' machine, requires the axes of the driver and driven wheels to be as nearly parallel to each other as may be; whereas in the structure represented in the complainant's reissued patent, the axes are required to incline toward each other, or their ends, if the axes are parallel to each other, to be projected out of the same plane to each other at a considerable angle, so that the opposite ends of the connections of the tumbling-shaft will form a considerable angle with the shafts between which power is to be given.

Or, in other words, if the tumbling-shaft be used, it must be used in such a location as that the chain-belt could not work in the same place; therefore I do not regard the devices as a substantial equivalent, the one for the other. I have never heard of their being substituted for one or the other, and do not believe that they can be so substituted without a reorganization and rearrangement of the parts. They only resemble each other in the element of communicating motion.

Q. 30. State whether or not you find in the original Hoffheins' patent of 1863, No. 40481, the combination of elements enumerated by Edward S. Renwick, complainants' expert, in his answer to question sixteen (16), composing the combination recited in the said seventh (7) claim—see printed copy of deposition, page thirty-five (35)—and give your reasons for any opinion you may express.

468 A. I have made the comparison called for in the question, and I believe they do exist in the said patent.

Q. 31. Referring to Hoffheins' reissued patent, No. 2490, with its interpolations and alterations as heretofore pointed out by you—state whether or not you find in exhibit "Complainants' Exhibit, Model of Defendant's Harvester," substantially the same combination of parts mentioned in said claim as is set forth in said reissue specification, and drawings, and give your reason for any opinion you may express?

A. For the reasons already stated in my preceeding answers, in relation to the construction and mode of operation of the raking apparatus described and shown in the complainants' reissue, I do not find in the defendants' machine the combination of devices recited in the said seventh claim.

Q. 32. State whether or not you find in the original Hoffheins patent

of 1863, No. 40481, the combination of elements enumerated by Edward S. Renwick, complainants' expert, in his answer to question seventeen (17), composing the combination recited in the said ninth (9) claim—see printed copy of his deposition, page thirty-seven (37)—and give your reasons for any opinion you may express.

A. I have made the comparison called for in the question, and for the reason given in my preceeding answer in relation to the driver's seat, I do not find the combination receited in the said ninth claim, in said original patent.

Q. 33. Referring to Hoffheins' reissued patent, No. 2490, with its interpolations and alterations as heretofore pointed out by you, state whether or not you find in exhibit "Complainants' Exhibit, Model of Defendants' Harvester," substantially the same combination of parts mentioned in said claim as is set forth in said reissue specification, and drawings, and give your reasons for any opinion you may express-

A. I have made the comparison called for in the question, and I do not find in the defendants' machine the combination of elements recited in the said ninth claim for the reasons already given by me in
469 my previous answers, and specially in my answer concerning the first claim of complainants' reissued patent 2490.

Q. 34. Please examine the full sized machines marked respectively Defendants' Exhibit A, and Defendants' Exhibit B, and state how said machines correspond or differ from the model "Complainants' Exhibit Patent Office Model of Hoffheins, 1862, Patent," and also as to the original patent of 1862, No. 35315, and make also the same comparison with reference to Complainants' Exhibit, Patent Office model of Hoffheins' 1863 Patent, and also as to the original patent of 1863, No. 40481.

A. I have made the comparisons called for in the question, and with reference to the model and the patent of 1862, I will first point out the resemblances and differences as I understand them.

So far as pertains to the organization of the raking mechanism and the location of the same relatively to the platform of the machine, I think the Patent Office model of 1862, is substantially a correct representation of that shown in the large machines Defendants' Exhibits A and B.

The large sized machine of Defendants' Ex. A has an iron frame substantially like that represented in the Fig. 4, of the complainants' patent of 1863; but the machine, Defendants' Exhibit B, has a wooden frame, made of longitudinal and transverse bars substantially like that represented in the complainants' Patent Office model of 1862; and the relative proportions of the parts, viz, the main frame, the drive-wheels, platform, and the post for supporting the rake and its peculiar curve up and inclined over the main frame, and also the rake-arms and the method by which they are mounted on the top of said post are, I believe, about the same as represented in the Defendants' Exhibit B, and in so far as relates to the several proportions just mentioned, and the relationship of the several parts with each other, they are substantially the same in the iron frame machine, Defendants' Exhibit A.

In so far as relates to the point of suspension of the inner end
470 of the platform, both of the full sized machines differ from the model and also from the patent of 1862, as their point of suspension is inside of the inner edge of the rim of the left-hand drive-wheel.

In the iron frame machine, Defendants' Exhibit "A," the hook to which the chain is attached for suspending the platform is placed upon the rear end of the tongue, and at the left-hand corner thereof, and

corresponds substantially to what is shown in complainants' model of 1863.

The method of driving the raking apparatus, viz, by a leather belt and belt-tightener, as represented in the Patent Office model and also in the patent of 1862, are not shown in either of the large machines. But the raking apparatus in both of them is driven by an extensible tumbling-shaft, substantially like that represented in the model and patent of 1863.

Again, there is no finger-beam or cutting apparatus represented in the model or in the patent of 1862, such as is shown on both of the machines—Defendants' Exhibits "A" and "B."

Again, there is no driver's seat shown in the model or in the patent of 1862, whereas the large machines have a seat on each, said seats being shown in about the position relatively to the main frame and main axle and driving wheels as represented in the Patent Office model of 1863, and also in the patent thereon.

None of the gearing for driving the cutting apparatus is represented in the Patent Office model of 1862, nor is it shown or described in the patent of 1862.

These are, I believe, the chief points of difference and resemblance between the model and patent of 1862, and the said large machines, Defendants' Exhibits "A" and "B."

So far as relates to the resemblance and differences between the Patent Office model and the patent of 1863, the large machine—Defendants' Exhibit "A"—is, in my opinion, substantially the same, I believe, in every respect, except that the rake-post in the said large machine is not as high, and the cutting apparatus and base of the rake-post is not proportionately as far from the inner drive-wheel, as
471 represented in the model of 1863. But I observe that the rake-post in said model is so much higher than the inclination of the rake-arm, that a machine constructed according to the proportions shown in the model of 1863, would raise the rake-teeth so far from the platform as to be perfectly inoperative, and the said model represents the rake-post as considerably higher in proportion to the rest of the machine than is shown in Fig. 1 of 1863 patent. But in all other respects I believe the said model fairly represents the large machine, Defendants' Exhibit "A," and also the large machine, Defendants' Exhibit "B," except that the said Exhibit "B" has a wood frame, as represented in the Patent Office model of 1862. The driver's seats, as mounted on said machines, are in, I believe, substantially the same position on the large machines as represented in said model of 1863.

I observe, also, that the main gear-wheel on the first counter-shaft in the machines are represented on the opposite side of the pinion on the crank-shaft; I do not regard this difference as material in this controversy.

Q. 35. Have you examined the defendants' photographs Nos. "1, 2, and 3," and were you present when the negatives were made for the same; and if yea, to what heighth was the outer shoe raised when the negative for No. "2" was made?

A. I have examined the several exhibits, and was present and assisted in arranging the machine, Defendants' Exhibit "A," in its various positions for having the said photographs made, and the elevation of the outer shoe was between eight and nine inches—that is, it was that much higher than the inner end of the platform.

Q. 36. State whether or not the position of the machine was changed in the making of the negatives for the photographs, Nos. "1, 2, and 3,"

and if not, explain what position the man represented in the photograph, Exhibit No. "3," occupied on the machine when the negative for said exhibit was made.

A. The position of the machine on the floor remained exactly the same when the negative for Exhibit No. 3 was made, as for Ex-
472 hibit No. 2, and I requested a person who was standing by to take his seat on the machine, said seat being located in the same place as shown in photograph No. 2, and the said seat was placed to the rear of the main axle upon the bearing or rest for the said seat, as represented in Defendants' Exhibit "A."

Q. 37. Is there any other place arranged for a seat in the said machine, Defendants' Exhibit A, than the one to which you have referred? and if so, state what.

A. There is a flat bar of iron projecting out towards the front of the machine, and which is fastened at the same point as the curved bar that supports the seat, and it has a hole in its front end, and is so constructed that a seat could be fastened thereon. The said bar relatively to the floor on which the machine stands, as represented in the photographs, is about eight inches lower than the place where the seat rests.

Q. 38. State whether or not, in your opinion, a seat could be mounted on any portion of the main frame of the said machine, Defendants' Exhibit A, on which a driver could sit while the rake is in motion.

A. In my opinion it could not, without raising the raking apparatus or post on which it rests to such a height, as to make the machine practically inoperative. I mean by that, that the rake-post would be carried to such a heighth that as the machine was drawn over the inequalities of the ground, the vibrations would be so great as to soon switch the arms of the rakes and reels off from their attachments to their bearings or axles on which they vibrate.

Q. 39. State whether or not the point of suspension to the main frame of the said machines (Defendants' Exhibits A and B) is located sufficiently far towards the centre of the machine to keep, or have a tendency to keep, the frame in a horizontal position, or to bring the weight of the raking apparatus and the platforms between the two supporting wheels.

A. In my opinion the said point of suspension or connection with the main frame is so nearly in the path of the left-hand drive-wheel that it can have very little, if any, practical value in balancing the
473 weight of the raking apparatus and the platform between the two drive-wheels; and in addition to the fact that the point of suspension on the main frame is so nearly to the left hand of the machine, the arm which extends out from the platform in neither of the said machines, nor in the Patent Office model of 1863, extends far enough to the right, or towards the center of the machine, to bring its bearing point directly under the point of attachment with the frame, and consequently there is a constant tendency, to whatever degree of difference there may be, from a vertical line to draw the weight over onto the left-hand drive-wheel of the machine.

Adjourned to meet at same place October 10th, 1877, at 10 a. m.

900 CHESTNUT ST., PHILA., *Oct. 10th*, 1877.

Meeting held pursuant to adjournment. Parties present.

J. Boyd Eliot resumes:

Q. 40. Have you examined the English letters patent granted to Fred-

erick George Underhay, dated April 27th, 1853, No. 1006, for improvement in reaping and mowing machines and marked "Defendants' Exhibit, Underhay Patent," and also a model of the same; and if yea, do you understand their construction and mode of operation? and please state what you find therein represented concerning the organization of a sweep-rake in combination with a quadram-shaped platform and cutting apparatus; and compare the same with the invention set forth in the Hoffheins reissues of patents of 1862 and 1863, which relate to this subject.

A. I have frequently examined the said English patent, and also the model made to correspond substantially with the drawings therein represented, and I find that the mechanism in the said Defendants' Exhibits "Underhay Patent and Model" represent a harvester ma-
474 chine in which there is a quadram-shaped platform, in front of which blades revolve for the purpose of cutting the grain, and above which there are arms radiating from a vertical shaft, said arms carrying a kind of basket-work or grating for the purpose of pressing the grain first towards the said cutters and then carrying the grain around in the arc of a circle and endwise into a hopper or receptacle, from which it was delivered from the machine.

The said wings or arms performed, to a certain extent, the operation of raking devices, and they were so mounted upon the vertical axes that carried them that they could have a partial rotation on their own axis or the point of connection with the shaft with which they revolved.

Said arms were also controlled in their partial rotation by a cam way or guide, upon which projections from the axes of the arms rested during the revolution of the main shaft; consequently, as the said shaft revolved to cause the arms to sweep over the platform of the machine, they received a partial rotation from the said cam, thereby causing the lower edges of the said wicker work to descend into the grain and press it towards the cutters, and in that position sweep across the platform in the arc of a circle, and then rotate up so as to clear the grain that might be carried by them into the hopper at the rear end of the platform, and in the said horizontal position to pass over the frame of the machine, and over the wheels thereof, and then rotate downwards again, and descend into the uncut grain as in the beginning.

The specification in the said Underhay patent says:

"The cut crop is moved towards the platform, each of said wings following a cutter in such manner that it directs the crop towards the platform, and then in its continued rotation and movement drive the cut crop beyond the platform."

And again it says:

475 "By the rotation of the cutters *j* the crop is cut or mowed, and is then moved towards and then onto the fixed platform *l* by means of the wings *m*, which are made of opened basket-work or other suitable materials, and such wings move the cut crop from off the platform on to a sliding floor,"

which language, taken in connection with the drawings, show the operation of the said reeling and raking devices, and which, when compared with the raking apparatus set forth in the complainants' patents of 1862 and 1863, show that the rotation of the rake-arms upon the axis on which they revolve by means of a cam and projections on the said axis, and for the purpose of turning the rakes down into the grain to serve as a reel, and then sweep it over the platform in the arc of a cir-

cle, and then partially rotate so as to raise up over the frame of the machine, is clearly suggested in the said Underhay patent.

Q. 41. Have you examined, and do you understand the United States letters patent, No. 10459, granted to Palmer & Williams, January 24th, 1854, for improvement in grain harvesters, and marked "Defendants' Exhibit, Palmer & Williams Patent;" and, if yea, please compare the structure therein described and shown with any of the inventions to which the sames relates recited in the Hoffheins reissues of patents of 1862 and 1863, concerning which you have heretofore testified?

A. I have examined and believe I understand said patent, and I find mentioned and therein set forth, that it is for certain improvements in the raking apparatus of a harvesting machine, in which there is a sweep-rake so organized, as to move the grain endwise in the arc of a circle, and deliver it from the machine, and then rise up and turn on its axis, so that the teeth are turned up out of the way of the grain on the platform, and in that position returned to the front edge of the platform, where the teeth are again turned down by mechanism provided for that purpose.

There is also shown and described in connection with said rake,
476 a reel which serves to gather the grain towards the cutting apparatus, which is placed at the front edge of the platform of the machine, and there is also upon the machine a driver's seat, and also a foot-rest for the driver, the several parts related to each other in such a manner that the driver when riding on the seat can have control of the various parts of the machine, and will also counterbalance by his weight the weight of the platfo'm, and to a certain extent the raking apparatus.

The specification in said patent says:

"The driver's seat is composed of pieces, F F F F crossing each other, so as to form an X, and the reel-bearers G G, on which at H is a board for a seat and at I is the foot-board."

It also says:

"T is a curved platform for receiving the stalks and heads of grain as they are severed by the cutting apparatus, and is in form a sector of a circle. The cutting apparatus is on the front edge of the platform, and may be constructed in any well-known or usual manner, and is operated by the crank on the end of the crank-shaft P."

The said platform is also carried at its inner end by being attached to the frame that is mounted upon the driving-wheel of the machine; consequently, in comparing the invention set forth in the said Palmer & Williams patent, with the inventions specified and claimed in the Hoffheins patents of 1862, and 1863 we find a combination in a harvesting machine, of a main fame, a platform, a finger-beam, a cutting apparatus, a sweep-rake and a driver's seat, all arranged so that the several parts can co-operate together and that the driver can ride on the machine when the rake is in operation, and have full control of the machine, and his seat is located on the said machine that his weight will, to a certain extent, assist in counter-balancing the weight of the cutting appa-
477 ratus and platform, and also the rake when it is in its forward position.

It is true that the combination of the several parts which I have mentioned as existing in the said Palmer & Williams patent differs in many respects in the construction of several of the devices mentioned by me, as, for example, the raking apparatus is very different in its construction and organization from that represented in the Hoffheins patents of 1862 and 1863, but if the said Hoffheins patents be construed

to cover any or all kinds of raking devices, then I think the rake represented in the said Palmer & Williams patent may be properly included under the term of what is called a "sweep-rake."

Q. 42. Have you examined, and do you understand the United States letters patent, No. 14350, granted to Owen Dorsey, dated March 4th, 1856, for improvement in harvester rakes and marked "Defendants' Exhibit, Dorsey Patent," and, if yea, please compare the structure therein described and shown with any of the inventions to which the same relates recited in the Hoffheins reissue of patents of 1862 and 1863, concerning which you have heretofore testified?

A. I have frequently examined, and I believe I understand said patent, and I find it is for "improvements in rakes for harvesting machines," and the invention consists in mounting the rake-arms upon a vertical shaft and so connecting the said arms with the top of said shaft that they revolve with it, and at the same time vibrate by means of a cam, in such a manner that when the end of an arm to which the rake is attached is sweeping over the platform, which is of a quadrant shape, the opposite end of the arm is caused to rise up so as to clear the frame of the machine. In other words, the arms are diametrically arranged so as to form pairs, with the rake at one end and a rake or reel rib at the other; and consequently the motion of the rake determines or controls, to a certain extent, the motion of the rake or reel rib at the opposite end.

The specification says:

478 "The general arrangement is such that the rake-head is brought by a sweeping descent upon the front edge of the platform, and in so doing draws the uncut grain towards the cutters. Then the rake passes over the platform with a sweep, or quarter-circle, and forms a side delivery at the rear of the driving-wheel."

And again it says:

"But on reaching the edge of the platform the rake-head is suddenly raised by the arm passing up the incline *m* (see Fig. 3 of the guide-rail), while the rake and opposite end of the arm drops at a corresponding incline, and by continuing its movement the rake reaches over the heads of the grain, and gradually descending by the guide-rail draws the wheat towards the cutters. By this means I dispense entirely with the reel used on harvester for drawing the grain to the cutter."

Now, upon comparing the raking apparatus as set forth in the said patent of Dorsey with the raking apparatus in the Hoffheins patents of 1862 and 1863, I find that the principle of one arm controlling the operation of the other is common to both. The rake and reel arms in the said Hoffheins patents are what might be termed diametrical arms, and instead of being mounted on the vertical axis which carries them around in their sweeping operation so as to vibrate up and down in places corresponding with the said axis, they are so mounted as to partially rotate on a pivotal connection with the shaft with which they revolve; but the said rotation operates upon both ends of the diametrical arms at the same time, and is caused by the same pieces of mechanism; so, also, the holding of the arms in the fixed position necessary to conform to their proper path is produced by the same cam and the same projection resting on the cam, and from the arm, so that when the rake at one end is sweeping the platform the opposite end is

479 caused to travel in a corresponding plane directly opposite and parallel to the platform; consequently, I find, in this respect, an organization of rake and reel arms corresponding substantially to those

represented in the said Dorsey patent, and their mode of operation is substantially the same, viz, that of acting as reeling devices to press the grain towards the cutters, and as raking devices to sweep it over the platform and deliver it in gavels at the rear of the machine.

Q. 43. Have you examined and do you understand the United States letters patent, No. 17779, granted to John P. Manny, dated July 14th, 1857, for "improvement in harvesters," and marked "Defendants' Exhibit, Manny Patent?" and if yea, please compare the structure therein described and shown with any of the inventions to which the same relates, recited in the Hoffheins reissues of patents of 1862 and 1863, concerning which you have heretofore testified.

A. I have examined, and I believe I understand said patent, and I find that it relates to certain improvements in harvesting machines, in which the draught frame or tongue on the machine is mounted upon two carrying-wheels, mounted on the same axle at the front end of the machine, and there is a third wheel some distance to the rear of the first, for the purpose of carrying the rear end of what may be termed the supporting frame, and one end of which is mounted upon the axle of the front wheels, and the other end upon the rear castor-wheel. This supporting-frame, which is marked "D" in the said patent, is for the purpose of holding up in the inner end of the cutting apparatus and platform, or as the specification states:

"Raising and lowering the platform so that any and all of its positions it shall hold and maintain its horizontality in front and rear."

The inner end of the finger-beam is connected by two arms which are fastened at right angles to its front edge and are attached by boxes or bearings upon the main shaft, each of said bearings being inside
480 of the main carrying-wheels, by which means the finger-beam and the platform may vibrate on the shaft as a center. The inner end of the finger-beam extends underneath the supporting frame, and is suspended thereto in the following manner, as the specification states, to wit:

"A lever, J, is hung to the rigid frame D, and extends to near the conductor's seat K, so that the conductor can readily grasp or operate it. To this lever J is suspended the finger-bar H by a suspension rod, *a*, so that the conductor can raise or lower the platform at pleasure."

To the free end of said lever there is an attachment made to a coil spring in such a manner as to counteract the downward pressure or weight of the finger-beam and platform, and the amount of said resistance is, of course, dependent upon the strength of the spring.

There are also devices described in the said patent, for the purpose of retaining the platform in a horizontal position, or in other words—

"To be raised or lowered in parallel lines, front and rear."

Again, the specification says:

"The finger-beam extends under the rigid frame D about midway between the supporting wheels of said frame, and the beam H is supported by the rigid frame, as heretofore described."

And, again, the specification says:

"When these machines are used for mowing the platform and raking apparatus are removed, and the cutter-bar is dropped on the ground and moves over it and in contact with it."

Now, in comparing the structure of said machine, Defendants'
481 Exhibit, Manny Patent, with the invention set forth in the Heffheins patents of 1862 and 1863, I find in both two bearing-wheels for supporting the draught-frame, one of which is a driving-wheel; also, a rigid frame, which maintains always the same position

relatively to the ground, and suspended thereto a finger-beam and platform in such a manner that the inner end of said finger-beam and platform is supported at a point between the two main wheels of the machine, the combination of said devices being in terms substantially those to which I have referred in describing the parts referred to by me concerning the machine described in the said Manny patent.

The said patent also speaks of changing the machine from a harvester to a mower, and in that case the platform and raking apparatus are removed, and the cutter-bar is dropped on the ground, which language evidently implies to my mind that there was a raking apparatus planned or intended to be used in connection with the said machine, and if this were the case, then the machines represented in the complainants' patents would require the same thing to be done, in order to convert them into mowing machines, and there is also a driver's seat shown in the said Manny patent, mounted over the rigid frame.

Q. 44. Have you examined, and do you understand the United States letters patent 18562, granted to Willard & Ross, dated November 3rd, 1857, for "improvement in harvesters," and marked "Defendants' Exhibit, Willard & Ross Patent," and, if you please, compare the structure therein described and shown with any of the inventions to which the same relates, recited in the Hoffheins reissues of patents of 1862 and 1863, concerning which you have heretofore testified?

A. I have examined and believe I understand said patent, and I find that it consists of certain improvements in harvesting machines, in which the main frame is mounted upon the supporting-wheels, either or both of which may be used as driving-wheels; and there is connected therewith a platform and cutting apparatus by a hinge-joint con-
482 nection, one end of the bar of which is attached to the platform, and the other to the outside corner of the main-frame, or a bracket extending therefrom, and the rear end of the said platform at its inner side, or that next to the drive-wheel, is suspended by a chain, one end of which is attached to the platform and the other end to a hook or an arm which projects out from the main frame.

The specification states:

"This invention consists in a peculiar mode of attaching the cutting device to the machine, so that the cutting device may be allowed to yield or 'give' to correspond to the inequali' of the surface of the ground and also permit it to be raised bodily at the will of the operator, in order that it may pass over obstructions, and also be free from the ground when not in use and the machine is being moved from place to place."

It then proceeds to describe in detail the several parts of the machine, and among other things described in the said specification it says:

"The finger-bar L is of the usual construction, as also is the sickle, the usual saw-shaped teeth K being attached to the bar H, which is allowed to work back and forth on the finger-bar. T is the platform, the front end of which is attached to the finger-bar L, and the back end is suspended by a chain, *e*, from a bar, *m*, attached to the frame A.

There is, also, in the said patent, a description of devices by which the operator can regulate the height of the cutting apparatus, which is set forth in the following language:

"In case, however, the finger-bar is to be raised bodily—that is, horizontally upward—in order to pass over an obstruction of any
483 kind, it will be seen that the finger-bar, in consequence of its joint connection with the bar I, will require support. This is obtained by the lever P, which, when its outer end is raised, has the set screw *f* at its inner end pressed down upon the projection O of the shoe

N. The bar I is raised by actuating the clutch Q, so as to connect the pulley *i* with the axle C, the said pulley as it rotates winding up the cord or chain J, and raising the bar I at the outer end of the lever P."

The lever V operates the clutch Q, and the handle of said lever is placed in close proximity to the driver's seat, which is mounted upon the rear end of the main frame, and in such a position as that the weight of driver will counter-balance, to that extent, the weight of the cutting apparatus and the platform. Now, in comparing such a structure with the invention set forth in the Hoffheins' patent of 1862 and 1863, I find in each of said patents the means of suspending the inner end of the platform, so as to carry it at the proper height relatively to the main frame of the machine, said machine having two supporting wheels, either of which may be used as drive-wheels, and also a hinge-joint connection between the cutting apparatus and the main frame, and in one of the patents, viz, the one of 1863, also a driver's seat placed to the rear of the main driving axle.

Q. 45. Have you examined, and do you understand the United States letters patent, No. 18798, granted to Ephraim Ball and John Butler, dated December 1st, 1857, for improvement in mowing-machines, and marked "Defendants' Exhibit, Ball and Butler Patent," and if yea, please compare the structure therein described and shown with any of the inventions to which the same relates, recited in the complainants' exhibits reissues of the Hoffheins' patents of 1862 and 1863, concerning which you have heretofore testified?

A. I have read and believe I understand the said patent, and I find therein shown and described a structure in which there is a mow-
484 ing-machine having two supporting or drive wheels, upon which is mounted the main frame, and to the inner side of which is attached a cutting apparatus and finger-bar having a hinge-joint connection, formed by a draft bar extending from the front inner corner of the main frame back to the finger-beam, and there connected by a traverse bar to the rear end of the frame of the machine by a jointed connection at each end said bar, in such a manner that the finger-bar and cutting apparatus can conform to the undulations of the ground, entirely independent of the main frame or the undulations which it may have in travelling over the surface of the ground, the arrangement being substantially such as that represented in the Hoffheins' patents referred to in the question, in so far as relates to the several parts mentioned by me; in other words, when the inner end of the platform or finger-beam, in the machines represented in the said Hoffheins' patents, are not suspended by the link or chain to the main frame, they have substantially the same construction and mode of operation as represented in the said defendants' exhibit.

Q. 46. Have you examined and do you understand the United States letters patent No. 24555, granted to C. P. Gronberg, dated June 28, 1859, for an improvement in raking attachments in harvesters, and marked Defendants' Exhibit, Gronberg Patent; and if yea, please compare the structure therein described and shown with any of the inventions to which the same relates, recited in the complainants' exhibits reissues of the Hoffheins patents of 1862 and 1863, concerning which you have heretofore testified.

A. I have read and believe I understand the said patent, and I find that the invention "relates to an improvement in that class of raking devices in which a vibrating rake is employed, and made to travers' over a section or quadrant-shaped platform. The invention consists in a novel means employed for operating the rake." And, without enter-

ing into minute details concerning the various parts of the mechanism,
I will state in general terms that the raking apparatus is mounted
485 upon the inner corner of the platform, one portion of it being
supported upon or near the inner end of the finger-beam, and the several parts are so arranged that the said rake receives its motion from a driving attachment mounted upon the inner side of the frame of the machine, said driving attachment consisting of rack and pinion, and a crank which is on a shaft which receives motion from the gearing of the machine. The rake is of that class known as the vibratory or reciprocating rakes, but inasmuch as it has a sweeping motion over the platform, it may properly be termed a sweep-rake, and therefore, in comparing it with the said Hoffheins' patents, particularly the one of 1863, I find a sweep-rake mounted on the platform of the machine, driven by a connection or driving device, which is on the inner side of the drive-wheel of the machine, or next to the cutting apparatus.

Q. 47. Have you examined and do you understand the United States letters patent No. 24944, granted to Stephen A. Lindsay, dated August 2d, 1859, for "improvement in harvesters," and marked "Defendants' Exhibit, Lindsay Patent of 1859"? and if yea, please compare the structure therein described and shown with any of the inventions to which the same relates, recited in the complainants' exhibits reissues of the Hoffheins' patents of 1862 & 1863, concerning which you have heretofore testified.

A. I have read and believe I understand said patent, and I find that the—

"Invention relates to the attachment of a self-raking apparatus to harvesters, and consists in the manner of hinging the platform of the harvester and the circular guide-way, which controls the undulating motion of the rake to the platform of the machine, as that both the platform of the harvester and the rake shall rise and descend simultaneously when the machine passes over uneven or broken ground."

486 The frame of the machine is supported upon two driving-wheels and by a castor-wheels, which is located in front of the driving-wheels, and to the said main frame, the quadrant-shaped platform, and a cutting apparatus is attached by a jointed connection, and there is also a castor-wheel at the outer side of the said platform. The raking apparatus is mounted upon a supplemental frame between the drive-wheels of the machine, and consists of a vertical axis, carrying a horizontal head at its upper end, upon which are slotted uprights in which the arms of the rakes and reels rise and descend, their motion being governed by a cam, over which the rake and reel arms travel. The said rake and reel arms are pivoted at their inner ends independently of each other, so that they can vibrate up and down independently of each other.

A portion of the cam or guide way for the rakes is pivoted at two points to the rest of the cam, which is mounted in a fixed position upon the supplemental frame. This pivoted portion of the cam is that part over which the rakes travel in moving over the platform, and its inner edge, or that next to the platform, is connected with jointed connection, attached to a post which is mounted on the inner side of the platform; said connection is so made that as the inner side of the platform rises and falls, according to the unevenness of the ground, the said hinged inner portion of the cam-way will also rise and fall, and consequently, if a rake or reel arm is travelling over the said hinged portion of the cam or guide way, it will also be caused to rise and fall to the same degree, and in this manner the rake or reel is made to conform to the un-

dulations of the platform, and thereby maintain their proper working position relatively to it.

Now, in comparing the structure set forth in the said patent with the invention in the Hoffhein patents, mentioned in the question, I find that the several devices for causing the rake and reels to conform to the surface of the platform are substantially different, but in so far as the principle of having a rake, so mounted in relation to a quadrant-shaped platform, said platform being attached by a pivoted con-
487 nection to the main frame of a two-wheeled machine, and in such manner that the rakes can conform to the undulations of the ground, and to a certain degree independent of the main frames. I find such principle represented in the said Hoffheins patents.

Q. 48. Have you examined and do you understand the United States letters patent No. 30882, granted to Stephen A. Lindsay, dated December 11th, 1860, for "Improvement in rakes for harvesters," and marked "Defendants' Exhibit, Lindsay Patent of 1860?" and, if yea, please compare the structure therein described and shown with any of the inventions to which the same relates recited in the complainants' exhibits reissues of the Hoffheins patents of 1862 and 1863, concerning which you have heretofore testified.

A. I have read and I believe I understand the said patent, and I find that it relates to certain "improvements in automatic rakes for harvesters," and that the invention in general terms is clearly set forth in the following language in the specification:

"My invention consists in the combination of a hinged platform with an automatic and revolving rake, the shaft of which is connected with the gearing of the machine by means of an universal joint, and which shaft is supported by braces and stays, secured to the platform so as to cause the rake to rise and descend simultaneously with said platform when the machine passes over uneven or broken ground."

In this machine there are two main wheels as carrying and driving wheels and a castor-wheel in front, and to the said frame a tongue is attached for drawing the machine, and to said frame a quadrant-shaped platform is attached by a pivoted connection so that it may undulate independent of the main frame; the rake and reel apparatus consists of arms and rake and reel heads, attached to their outer extremities, the inner ends being attached firmly to a spider or head on the upper end of a shaft, which is connected by an universal joint to a
488 driving-wheel that gears into a bevel wheel on the main shaft; the upper end of the rake-shaft as well as the rakes and rake-arms are supported by a bracket, which is mounted on the platform, the upper end of which is forked to receive the upper end of the rake-shaft and which thereby forms the support of the said shaft, and with it the rake and reel arms; consequently, as the platform vibrates up and down, it causes the said bracket to also vibrate with it, and thereby vibrate the rake-shaft, which is supported in the fork at its upper end, and in this manner the rakes and reels are caused to maintain their proper relative position to the surface of the platform.

Now, on comparing such a structure with the invention set forth in the Hoffhein patents, referred to in the question, I find a quadrant-shaped platform attached to a frame by pivoted connections, said frame being mounted on two drive-wheels, and a rake and reeling apparatus supported on said platform, and receiving its motion by a shaft, connected with the gearing of the machine, substantially like a tumbling shaft is mounted in communicating motion—the several devices being

in their combination and arrangement different from the corresponding devices, in many respects at least, so far as relates to the organization of the raking devices of those set forth in said reissued patents. But in so far as relates to the principle of supporting a raking apparatus on a quadrant-shaped platform, which is pivoted to a frame supported on two drive-wheels, the said rake being so mounted as to vibrate with the platform, I regard such a principle as common in all three of these exhibits.

Adjourned to meet Thursday, October 11th, 1877, at 10 a. m.

489 OCTOBER 11TH, 1877.

Meeting held pursuant to adjournment.

Parties present, S. A. Bowman, esq., counsel for complainant; George Harding, esq., counsel for defendants.

J. BOYD ELIOT resumes:

Q. 49. Have you examined and do you understand the United States letters patent, No. 24700, granted to C. Aultman and Company, dated July 5th, 1859, for "Improvement in harvesters," and marked "Defendants' Exhibit, Aultman's Patent?" and if yea, please compare the structure therein described and shown with any of the inventions to which the same relates, recited in the complainants' exhibits reissues of the Hoffheins patents of 1862 and 1863, concerning which you have heretofore testified.

A. I have examined and believe I understand said patent, and I find that it pertains to improvements in harvesting machines in which the cutting apparatus is hinged to the main-frames of a two wheeled machine by a double hinged joint connection; the hinge which is connected to the frame is nearly in a central position between the two, carrying a drive-wheel of the machine; and the other hinges are attached, the front one to near the inner end of the finger-beam, or directly over the inner shoe, and the other hinge is connected at the inner rear corner of the platform in such a manner that the platform could undulate according to the inequalities of the ground wholly independent of the undulations of the main frame.

Now the invention specified in this patent is for the purpose of preventing, to a certain extent, the too free undulatory motion of the platform independent of the main frame.

And the specification states:

"To simply hinge the finger-beam and platform, leaves them
490 entirely too uncontrolable. To suspend them to the main frame, in addition to the hinge connection, causes them to receive all the rising or rolling motion of the said main frame. We have discovered the evil consequences of both these plans, and devised means for obviating the latter objection, while we still hinge the finger-beam and platform to the main frame."

Without quoting the entire description of the manner in which such an object is accomplished, I will state briefly, that it is effected by extending the inner end of the finger-beam beyond the hinge-connection with it or where it is attached to the inner shoe, some considerable distance towards the centre of the machine, and through the end of said projection of the finger-beam, a screw-bolt is placed, which extends up through the hinged coupling-arm that connects the platform with the main frame, and thereby suspends by said bolt the inner end of the finger-beam upon the coupling-arm to such an extent, as to prevent the outer end of the finger-beam from rising on the joint which is over the inner

shoe, in other words, it gags or suspends to a certain extent, the action of the jointed connection over the shoe or the inner side of the platform. The same thing is done at the rear end of the machine, where the hinged connection is made with the inner side of the platform, by extending a bar on the inner side of the platform inwards to a sufficient distance to receive the screw-bolt which suspends the connection at the hinged joint from too great a freedom of action.

Such a construction and arrangement of the parts, the specification says: "Allows the inner edge of the platform to rise or yield upward to a given extent (which may be adjusted or regulated by the nuts on the suspension bolt), but which prevents said inner edge of the platform from dropping below a given line, and thus whilst the main
491 frame of the platform may freely move on the hinged joints, *d d* (which are the inner points, or those near the centre of the main frame), there is provision for a rising motion below the inner line of the platform which can take place without in anywise affecting or being affected by the rising of the outer part of the platform; and thus if the inside shoe or divider should pass over any obstacle the platform or braces will admit of rising to yield to such obstacles without affecting the main frame or outer portion of the said platform. If the braces D F, were suspended to the main frame A, as in some of our former machines, it is obvious that the rising of the main-frame must lift up said braces, and they would carry up the platform or cutters, and thus, if the most remote wheel should drop into a hole and throw up the main-frame, this shock or rising up would be communicated through the hinged arms or braces to the cutters or platform. But by suspending the platform, or its bars or beams, to the hinged arms D, F, as shown, no such dropping of a wheel would affect the platform or cutters, as the frame would simply rock on the joints, *a*, *d*, and the motion be confined to itself."

Now, this arrangement of devices for gagging or checking to a certain extent, the action of the inner joint connection of the platform to the main frame of the machine is substantially what is accomplished by the suspension devices in the complainants' patent; in other words, to a certain extent, said suspension devices destroy the inner hinged joint connection of the inner side of the finger-beam, with the hinged bar that connects with the main frame. It is true, that if a single link be used as represented in the Hoffheins' model and patent of 1862, in a machine organized like the large machine represented in Defendants' Ex-
492 hibit A, that if the inner shoe should meet with a raised obstruction of some kind, or the left-hand drive-wheel should drop into a hole suddenly, before the inner shoe had reached the same depression, then the said link would either have to raise the inner corner of the machine, or be bent, or break its suspending connections between the main frame and the platform. Such a result would not take place in the use of a chain, as represented in the said large machine, Defendants' Exhibit A, or in the use of screw-bolts extending up through holes, as in the said Defendants' Exhibit, Aultman Patent.

The suspension devices, viz, the link and hook on the main frame, or some portion thereof, and also the extension piece to which the lower end of said link is fastened, do, in my opinion, substantially destroy the inner hinged-joint connection of the platform, or at least to as great extent as the same is done and fully explained in the quotations which I have made from the "Defendants' Exhibit, Aultman Patent." And, therefore, when said suspension devices in the complainants' machine are in working position, the inner hinged-joint is destroyed.

Q. 50. Have you examined, and do you understand the United States

letters patent, No. 33845, granted to Lewis Miller, dated December 3rd, 1861, for improvement in harvesting machines," and marked "Defendant's Exhibit, Miller Patent of 1861," and if yea, please compare the structure therein described and shown, with any of the inventions to which the same relates, recited in the complainants' exhibits, reissues of the Hoffheins' patents of 1862 and 1863, concerning which you have heretofore testified?

A. I have examined, and believe I understand said patent, and I find that it is for improvements in harvesting machines in which the cutting apparatus is connected to the main frame of a two-wheel machine by a hinged-joint connection substantially like that represented in the Defendant's Exhibit, "Ball Patent," and also in Hoffheins' reissued patents, and also in the large machine, Defendants' Exhibit A, and there is also shown in the said patent a reel for the purpose of
493 pressing the grain towards the cutting apparatus, said reel being mounted on supporters that move up and down with the finger-beam and the platform of the machine; and said reel has a flexible connection with the main frame by which it is driven.

The specification in the said Defendant's Exhibit, "Miller Patent of 1861," says:

"The object and purpose of my invention is to make a simple connection between the main axle and the reel-shaft, that will be flexible enough to allow the reel to move with the hinged finger-bar or platform, and rigid enough to insure the working of the reel whenever and as soon as the cutters are set in motion."

To accomplish such an object, the specification says:

"One of the reel-posts I, is set upon the bar F * * * " (which is the drag-bar that leads from the inner front corner of the frame, back to the shoe of the cutting apparatus; and the foot of said post is located near the front end of the inner shoe.)

"And the other post, J, is attached to the outside divider K"— (but this latter may be connected at any other convenient point or part at the outer end of the platform or finger-bar).

"The reel shaft, L, is hung in these posts, I, J, and is adjustable therein so as to be raised and lowered; to adapt the reel to taller or shorter straw or stalks. Near the lower end of the reel-post I, there is a box or bearing, M, adjustable in the slot, *b* and in this bearing is hung a shaft, C, carrying a pulley, N, and from this pulley, N,
494 an endless belt passes over and around the pulley, O, on the reel-shaft, by which the reel is driven."

Now, motion is communicated to the said lower pulley by means of an extensible tumbling shaft, or, as it is sometimes expressed, by toggle-joint connection, directly to the inner end of the main axle, a description of which I will now quote from the specification:

"The end of the main axle next the cutting apparatus and the end of the small pulley-shaft, *c*, next the main frame may be made square or many-sided, so as to receive the square or many-sided pods, *d*, *e* (Fig. 2), on the ends of the toggle-link, P. The central portion (P) of this toggle-link is connected to the pods or sockets, *d*, *e*, through universal joints, *f*, *g*, so that the two shanks of the main axle and of the pulley-shaft may have any positions that the irregularities of the ground may give to them, and yet this toggle-link will continue to drive the pulley-shaft whenever the axle turns. The shanks (one of which is shown at *h*, Fig. 2) are long enough to allow them to play through their pods or sockets, *d*, *e*, but without slipping out or disconnecting therewith. The universal joints, *f*, *g*, allows the toggle connec-

tion to assume almost any shape, whilst it continues as constantly and uninterruptedly to drive the reel as though it was rigid and non-flexible.

"I thus get a very simple and very efficient means of transmitting motion across a hinged joint, by which the finger-bar is connected to the main frame, which is yielding in its character but as constant in its operation as though no joint were used."

Now, in comparing the structure set forth in the said "Defendants' Exhibit, Miller Patent of 1861" with the Hoffheins patent of
495 1863, and also with the large machine, "Defendants' Exhibit A," I find in both substantially the same kind of an inside driving connection for the purpose of communicating motion to the reel-arms directly from the main shaft of the driving-wheel, with this difference, that there is an intermediate belt between the axis that carries the reel-arms and the inner end of the tumbling shaft, upon which there is a pulley to give motion to said belt.

The construction, however, of the said tumbling shaft, viz, its extensible sleeve and toggle-joint connections and its connection to the inner end of the main axle of the machine and the purposes for which it is there used are precisely the same as those represented in the model of Hoffheins, and also in his patent of 1863.

Q. 51. Have you examined, and do you understand, the United States letters patent No. 29640, granted to Isaac C. Twining, dated August 14th, 1860, for rakes for harvesters, and marked "Def'ts' Exhibit, Twining Patent?" and, if yea, please compare the structure therein described and shown with any of the inventions to which the same relates, recited in the Complainants' Exhibit, Reissues of the Hoffheins Patent of 1862 and 1863, concerning which you have heretofore testified.

A. I have examined and believe I understand said patent, and I find that it is for an improvement in the raking attachment of a harvester, in which there is a quadrant-shaped platform, the inner side of which is supported on the framework of the machine, so as to rise and fall according to the undulations of the ground with the drive-wheel of the machine.

The specification states that—

"The within-described invention consists in a novel and improved means of operating the rakes, substantially as hereinafter shown and described, whereby the two movements necessary to be given to the rake, to wit, the vibrating and the rising and falling one, may be obtained in a very simple and economical way, and the rake made to operate intermittingly when necessary."

496 Without referring to a description in detail, I will briefly quote from the specification some of the principle features of the machine as it is organized, as follows:

"A represents the main frame of a harvester, and B the platform, C is the driving or ground wheel, and D a castor-wheel, which supports the front end of a plank, on which the driver's seat is placed, the back end of the said plank being attached to the main frame, A. The sickle, E, which may be of the usual reciprocating kind, is attached to the front end of the platform, which is curved at its outer side to correspond with the arc described by the rake in its movement. The above parts may all be constructed and arranged in the usual way, and therefore, do not require a minute description."

The raking apparatus is so organized as to descend to the front edge of the platform, and to sweep across the same in the arc of a circle, and

to deliver the grain at the rear of the machine, and then rise up and return over the front of the platform in such an elevated position as not to interfere with the grain lying thereon. Now, in comparing the structure set forth in the said patent with the inventions specified in the said Hoffheins patents, I find that, as stated in the foregoing quotations, there is a driver's seat mounted on the machine in front of the main axle, and in such a position as that the weight of the driver will assist in counterbalancing the weight of the raking apparatus and also a portion of the platform of the machine, and that the driver when occupying his seat on the said machine is out of the way of the raking apparatus. It is true that the organization of the parts and their arrangement are different from those represented in the Hoffheins patents, and I have merely referred to the said Defendants' Exhibit, "Twining Patent," to show that a driver's seat located upon the main frame,
497 or in connection therewith, and in such a position as to be out of the way of the raking apparatus and so as to counterbalance the said raking apparatus and also a portion of the platform of the machine, as suggested in the Hoffheins reissued patent of 1863, referred to in the question, and having a sweep-rake in combination with a quadrant-shaped platform, is set forth in the said Twining patent.

Q. 52. Have you examined and do you understand the United States letters patent No. 32807, granted to McClintock Young, jr., dated July 9th, 1861, for "imp't in harvesters," and marked "Defendants' Exhibit, Young Patent?" and if yea, please compare the structure therein described and shown with any of the inventions to which the same relates, recited in the Complainant's Exhibits, Reissues of the Hoffheins Patents of 1862 and 1863, concerning which you have heretofore testified.

A. I have examined and believe I understand said patent, and I find that it is for certain improvements in harvesters, in which the specification says:

"My invention relates to a combined raking and mowing machine, or, in other words, to a harvesting machine, capable of being converted into a reaping or mowing machine, as the case may be. And my invention consists, first, in the manner of connecting the platform and cutting apparatus with the main frame so that they may rise and fall in conforming to the surface of the ground independent of each other. It consists, secondly, in combination with the platform and main frame, so hung on the main wheels of a rake and rake-driving mechanism that will admit of such independent movements, and yet remain in working gear with each other."

To accomplish such a purpose, the specification gives the following description:

"A B represent two supporting wheels on an axle, C, the wheel B being fast on the axle so as to make it a drive-wheel also. On
498 the axle, C, is supported a frame, D, to which the tongue, E, is attached, and to the tongue, E, at or about the point *a* thereon, is connected by a shackle or link connection, *b*, Fig. 3, a beam, F, that passes underneath the axle, C, and thence rearward, to support the platform, cutting apparatus, rake, and rake-driving mechanism, as will be explained. A brace, *c*, extends upwards from the beam, F, which passes up through a notch, mortise, or guide on the main frame, D, so as to keep this beam in line, whilst it or the main frame are free to move vertically as the ground over which they are passing may demand.

The platform G is fastened to a platform, beam, or support, H, which is oblique to and behind the finger-bar, and at the outer end of this support is the outside supporting-wheel, I, figure 2. The finger-bar is

made in two sections, J and J^1, the one J, which is much the longer one, being secured to the beam F and the short section J^1 to the platform G, the object of this being to have a short finger-bar and cutter when mowing, and a longer one when reaping, and to make the change without removing or detaching the finger-bar from the main frame to apply another in its place."

Upon the inner end of the beam which supports the platform next to the draught-frame or driving-wheels there is mounted a raking apparatus, and so located as to be at the inner side of the platform, and the rake-arms are so arranged as to sweep over a quadrant-shaped platform, for the purpose of delivering the grain at the rear end of the machine, and they are governed by a cam or guide way, by which, in their revolution, causes them, the rake-arms, to raise up over the main wheels of the machine, and after clearing them to descend again to the front edge of the platform; said raking apparatus is also in motion or
499 driven by a shaft extending from one end of the main drive-wheel shaft back to the cutting apparatus, each end being provided with a bevel gearing and also a universal joint connection in said shaft, by which the raking apparatus may be allowed to vary its position relatively to the draught-frame without disturbing the gearing that drives the raking apparatus.

The specification says, concerning this driving mechanism, that—

"This arrangement of driving-gear, though shown outside the supporting-wheel A, may be put inside, or between the wheels A B."

There is also provision made by means of hooks or projections on the rake-arms and a rib on the cam, "to draw the rakes down to and make them traverse close over the platform, the one going down raising up its fellow high enough to pass over the wheels, and then drop out or close to the platform."

The specification also adds:

"When this machine is arranged for mowing everything is taken off except the beam F and the finger-bar J."

From which language, as above quoted from the said specification, and also taken in connection with the drawings, I gather the information that in a structure constructed and described as in "Defendants' Exhibit, Young Patent," there is a harvesting machine provided with a quadrant-shaped platform, the draught-frame of which is mounted on two supporting-wheels, and with connections between the platform and draught-frame, so as to allow the platform to vary its position relatively to the surface of the ground independent of the main frame, and is also provided with an automatic rake, mounted upon the inner side which is next to the heel of the finger-beam and in line therewith; and said raking-apparatus is organized with what may be termed diametrical arms, so mounted upon the shaft with which they revolve,
500 that while one of the arms is sweeping over the platforms to remove the grain to the rear of the machine, the other arm is caused at the same time to be elevated to such a height as to sweep in a corresponding plane to the surface of the platform over the supporting or drive-wheels of the machine.

The location of said raking apparatus upon the platform, or in line with the finger-beam of the machine, and its relative position with the draught-frame and its supporting-wheels, is such that the pivotal attachments of the rake-arms with the shaft with which they revolve may be placed low down towards the surface of the platform, and thereby prevent to a considerable extent the severe strain upon the rake arms as the platform undulates or varies its motion over the surface of the

ground, and in this latter respect differs from the structure represented in the Hoffheins patent referred to in the question, but so far as pertains to a harvesting machine organized with the raking apparatus mounted on the inner side of a quadrant-shaped platform being connected with the draught-frame in such manner that one can vibrate independent of the other to a certain extent, and also in so far as the raking mechanism has diametrical arms in which the motions of one control the movement of the other or its opposite arm, and that while one of said arms is sweeping over the platform the opposite one is carried over and clears the drive-wheels, and also so far as relates to driving the raking apparatus by a shaft leading from the end of the main axle to the wheel that carries the rakes, so as to give direct or positive motion from the main shaft to the rake-shaft, and in such a manner as that the movements of the platform and the rake independent of the draught-frame will not interfere with the gearing or driving mechanism of the rake, I find in such general terms similar elements in the said Hoffheins patent of 1863, operating in a similar manner, and for substantially the same purpose.

Q. 53. Have you examined and do you understand the United States Letters Patent, No. 32556, granted to Robert Brown dated, June
501 18th, 1861, for "improvement in harvesters," and marked, "Defendants' Exhibit, Brown Patent of 1861," and if yea, please compare the structure therein described and shown with any of the inventions to which the same relates, recited in the complainant's exhibits, reissues of the Hoffheins' patents of 1862 and 1863, concerning which you have heretofore testified?

A. I have examined, and believe I understand, said patent, and I find that it is for improvements in harvesting machines, in which there is described and shown an automatic raking apparatus in which the supports for the rake are mounted upon the inner end of the finger-beam, or upon the sleeve by which the finger-beam is connected with the main frame of the machine, and in such a manner that as the quadrant-shaped platform of the machine undulates over the surface of the ground the said raking apparatus conforms to the same movements, independently of the movements of the main frame of the machine, which is mounted on two supporting and driving wheels, and which, by their various undulations, do not affect the relative position of the said raking or reeling apparatus in its movements over the surface of the platform.

The said machine, in general terms, is so organized as to have what is known as the Dorsey raking and reeling device, combined with a two-wheeled harvesting machine in which the main or draught frame is supported on two driving-wheels, to which a quadrant-shaped platform is attached and supported at its inner side by a hinge connection or joint to the main frame of the machine, and at a point between the two supporting-wheels, and in such a manner that the outer end of the platform can rise and fall without interfering with the movements of the main frame, which may be travelling in a different plane from the platform, according to the varying surfaces of the ground. This is accomplished by extending the inner end of the finger-beam beyond the inner shoe to the centre of the machine, and mounting it upon a sleeve or hollow shaft, which is supported in bearings upon the main frame of the machine.

502 The specification says:

"The finger-bar K is mounted upon a hollow or divided shaft, L, the journals S of which surround the journal *h* of the shaft H, and work in bearings M, secured to the main frame of the machine."

Upon the said "hollow or divided shaft L" the supports for the rake and reeling apparatus are mounted, and therefore the said shaft or support of the inner end of the finger-beam rotates on its axis or bearings, the supports for the rakes move with it, as they are directly attached to it.

The specification says:

"The vertical shaft of the reel is journaled in a frame, N^1, bolted to flanges l^1, projecting upward from the shaft L, which is the same 'hollow or divided shaft' upon which the inner end of the finger-beam is mounted."

The specification also adds:

"By this means the reel is made to follow the rising and falling of the finger-bar, and both may assume any position required by inequalities in the surface of the ground without interfering with the working of the cutter."

Now, without referring specifically to the various details of the construction of the rake, and the mechanism by which it is driven, I will explain in general terms that the rake-arms are substantially like those represented in the Dorsey patent, in the "Defendants' Exhibit, Dorsey Patent;" that is, they are diametrical arms pivoted at their centre, near the upper end of a vertical shaft, with which they revolve—said pivotal connection being such that the arms can vibrate up and down in a
503 plane corresponding to the axis of the said shaft and in such a manner that while the rake at the end of one arm is sweeping over the quadrant-shaped platform a rake or a reel-rib at the opposite end of the said arm is elevated to travel over the frame and drive-wheels of the machine in precisely the same kind of a path, and these movements are governed by a cam-way or a guide, which is mounted upon the supports that sustain the vertical shaft of the reel or rake.

The specification says:

"By securing the reel-standards upon the shaft of the finger-beam, without any connection directly with the main frame, and transmitting motion in the manner herein explained, the reel is made to work equally well, and at equal speed in any position of the bar, and may be removed with great facility to change the machine from a reaper to a mower."

Adjourned to meet Friday, October 12th, A. D. 1877, at 10 a. m.

OCTOBER 12TH, 1877.

Meeting held pursuant to adjournment.

Counsel present as before.

Mr. Eliot resumes and continues his answer to question 53:

Now, in comparing such a structure with the invention set forth in the said Hoffheins patents, reissues of 1862 and 1863, I find there is the combination of a quadrant-shaped platform with the main frame of a two wheel harvesting machine, connected by a hinged joint at the centre of the machine, or at a central point between the two drive wheels, the inner end of the finger-bar being supported at said central point and directly combined therewith, or mounted upon the inner end of the finger-beam a rake and reeling apparatus, provided with
504 diametrical arms pivoted to the upper end of a vertical shaft in such a manner that the said rake and reel arms will conform to the surface of the platform in sweeping over the same, the organization being such as that the said operation can take place independent of the vibration of the main frame of the machine, the principles of construction and mode of operation being similar in all three of the exhibits,

viz, the Brown patent and the Hoffheins reissued patent referred to in the question.

Q. 54. Have you read and do you understand letters patent of the United States, No. 40395, dated October 27th, 1863, granted to Robert Brown, and marked "Defendants' Exhibit, Brown Patent, 1863?" and state whether or not a raking apparatus similar to that shown in the Defendants' Exhibit, Brown Patent, 1861, could be applied to said machine, shown in Brown patent of 1863, without invention; if so, state how.

(Question objected to as incompetent, and for other reasons.)

A. I have read and believe I understand said patent, and I find that it is for improvements in grain and grass harvesters, in which there is set forth a modified construction of the invention represented in the Defendants' Exhibit, Brown Patent of 1861, in which the frame of the machine is divided in two parts, the front part or draught-frame being formed of two longitudinal bars, the rear ends of which are mounted upon the main axle of the machine, said axle being provided with two supporting-wheels at each end, and the said bars extend forward to a transverse bar, attached to which is the tongue or pole of the machine, and upon said front transverse bar the front end of two supports of a driver's seat is fastened, their rear end being supported by brackets or studs, the lower end of which are bolted onto the rear ends of the two bars that form a portion of the draught-frame; and upon said bars or seat supports there is mounted a seat which projects back a considerable distance behind the main axle of the machine.

505 Upon a shaft placed some distance in front of the main axle, on the main frame, there is attached a supplemental frame formed in the shape of a U, the open end of which is attached to the said front axle, and at the rear end of the said supplemental frame, or at the back end of the U-shaped frame, there is attached, by a pivoted connection, the inner end of the finger-beam of the machine, said attachment being formed by legs extending up from a cross-head on the inner end of the finger-beam to pivoted bearings on the rear end of the said supplemental frame; both of said pivoted bearings is concentric with the axis of the crank-shaft that gives motion to the cutters, the arrangement of these parts being substantially like that represented in "Defendant's Exhibit, Brown Patent of 1861."

The specification says:

"The finger-bar G is secured to the head *d* of the shaft H by means of the bolt *c*, and said finger-bar may be raised and lowered by the lever arrangement commonly used in harvesting machines in connection with a rope or chain, which is secured to the shoe-plate I of the finger-bar."

And it is manifestly evident from an examination of the drawings that the inner end of the finger-bar, as well as the rear end of the supplemental-frame, to which it is attached, could be so raised.

The specification, after describing the construction of the two frames and the attachment of the finger-bar to the rear one, says:

"This feature is of great importance in harvesting machines, in which a hinged cutter-bar frame is used within the main frame, as by the application of the two short axles which extend outside of the main frame no part of said axles obstructs the free motion of the inner hinged frame."

506 There is also described in the said patent a cutting apparatus and a method of raising and lowering the outer end of the finger-bar when the cutting apparatus is used for cutting grain, and I

find in comparing the several parts, as far as they are represented, that they correspond so far as the cutting apparatus and its connection with the frame substantially to those set forth in Defendant's Exhibit, Brown Patent of 1861. Consequently if a quadrant-shaped platform were attached upon the finger-bar and the supporting bar at its rear, as shown in the drawing of Fig. 1 in the patent of 1863, all that would be required to connect the raking apparatus represented in the patent, 1861 would be simply to extend the projections or lugs at the inner end of the finger-beam up sufficiently for to receive the supports of the rake, and the inner one of said supports might be connected to the hollow axis surrounding the crank-shaft, which is mounted on the supplemental frame. In other words, if the proportion of the parts or dimensions corresponded to the width of the supports of the raking apparatus, represented in the Brown patent of 1861, it could be lifted off the said machine of 1861 and bolted directly onto corresponding projections on the machine, as represented in the Brown patent of 1863, the only alterations required to be made, in my opinion, being that merely of adapting the parts to the proper dimensions and without any change of principle in their construction or mode of operation.

Q. 55. Have you read the testimony of Robert Brown in this cause, describing the use of a rake such as is described in his patent of 1861, applied on his jointed frame machine, described in his patent of 1863, and do you understand the construction and operation thereof, as explained by him; and if yea, describe what changes are therein set forth by him?

(Question objected to as leading, and for other reasons.)

A. I have read the said testimony concerning the modifications of his machine, as described in his patent of 1861, and the application of the raking apparatus as applied to the machine such as is repre-
507 sented in the Brown patent of 1863, and I believe that I understand the construction and mode of operation given in said testimony; and as I understand his testimony, a portion of which I will now quote, as follows:

"The frame was made of two parts, the axles of the driving-wheels being secured to the front part of the rear frame, hinged on the cross-shaft, extending backward far enough to receive the rock-shaft, it being hinged in the rear frame—the cutter-bar and raking apparatus was attached to it; that formed the hinge of the cutting and raking apparatus. The rear frame was suspended by a chain to a brace, secured to the front frame. The height of the cut was regulated by raising or lowering the rear frame by means of this chain being hooked up or down, as needed."

I find from this language, taken in connection with the drawings in the said Brown patent of 1863, in which I observe there is a hook at the rear end of one of the braces or supports for the driver's seat, and which I have already said was attached to the front cross bar of the main frame, that a harvesting machine is represented in which the inner end of the cutting apparatus was suspended at a point between the drive-wheels of the machine, so as to carry the inner end of the platform and finger-beam at the proper height relatively to the castor wheel at the outside of the platform, and in such a manner that the raking and reeling apparatus would sweep over the platform without being interfered with by the difference in the undulations of the main frame with the platform.

I have also examined the Defendants' Exhibit, Brown Model III, in this case, which substantially represents the arrangement of the double

frame represented in his patent of 1863, and also the method of attaching the finger-bar, and taken in connection with Mr. Brown's answer to his question 18, of his testimony in this case, which says:

508 "The rake was located on the rock-shaft that carried the cutter-bar at the point A; the cutter-bar and raking apparatus were all attached to the rear hinged frame."

I find that such a raking apparatus as is described in his patent of 1861, could be applied upon the machine described in his patent of 1863, without any material alteration, as I have already stated, and also that the inner end of the finger-beam and platform were supported at the proper height for cutting grain, by a chain suspended from a hook upon a support on the main frame, the said point of support being between the two drive-wheels—that is, as I understand both the Brown patents and Defendant's Exhibit, "Brown's Model, III," and also his testimony in connection therewith; I find that in my opinion no invention would be necessary to transfer the raking apparatus of the machine represented in Brown patent of 1861, to that represented in the Brown patent of 1863.

Q. 56. Please compare the harvesting machines constructed as described by you in your last two answers with the invention set forth in exhibits "reissues of Hoffheins' patents of 1862 and 1863," and give your reasons for any opinion you may express?

A. I have made the comparison called for in the question, and find so far as relates to the organization of a harvesting machine in which there is a quadrant-shaped platform, a finger-beam and cutting apparatus attached by a hinged-joint connection to the main-frame of a two-wheel machine, and having a raking and reeling apparatus mounted on the inner end of the finger-beam or platform in such a manner as that the rake and reel arms will conform to the surface of the platform independent of the main frame and so that the arms in sweeping over the said platform will cause the opposite end to pass over the main frame and drive-wheels of said machine while in operation. I find what I regard as substantially such an organization of mechanism in the Hoffheins reissued patents as compared with the devices described in my last two answers.

509 Furthermore, I also find in said machines, as described by me in my last two previous answers, a representation of a machine in which the inner side of the platform, the inner end of the finger-beam and the raking apparatus are all suspended upon the main frame, when the machine is used for cutting grain, in such a manner that the weight of the platform and finger-beam and raking apparatus, do not tend to produce a "sudden or abrupt deflection of a rake and reel, mounted upon a hinged-joint cutting apparatus," as referred to in the eleventh claim of the complainants' patent, reissue 2224.

Q. 57. Prior to 1862, were belt-tighteners in common use, and for what purpose?

A. They were in common use, and so constructed as to serve both as guides to the slack side of the belt, and as devices for causing the belt to surround more of the surface of the pulley than would otherwise be the case without them; and said belt-tighteners were also constructed as to cause the belt to press more firmly upon the surface of the pulleys, in some instances by the gravitation of the belt-tightener upon the belt and in others by a spring pressure.

Mr. Harding gives in evidence all the patents referred to by J. Boyd Eliot in his testimony, and requests the examiner to mark them as they

have been noted in the separate questions, to wit: Questions 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54.

And also model marked Defendants' Exhibit, Underhay Model.

Cross-examination of J. Boyd Eliot by Mr. BOWMAN:

Cross-Q. 58. In your answer to question-in-chief you say:

"I do not find in the said original patent any description or allusion whatever to a cutting apparatus, or any method of its construction, or mode of operation, and which Mr. Renwick says in his testimony, on page 7, is composed of guard-fingers, and a series of blades attached to a cutter-bar."

510 Now, do you not think that the language of this statement is rather strong?

A. Perhaps it is in view of the fact that in the original specification of the Hoffheins' patent of 1862, it says: "The cutting apparatus is not represented."

Cross-Q. 59. Does not the sentence from which you have quoted also state:

"The cutting apparatus is not represented and may be constructed and operated in any suitable manner."

A. It does.

Cross-Q. 60. Does not the specification of the Hoffhein's original patent of 1862, when speaking of the mode of operation of the reel-arm, use the following language:

"Where it operates to present and hold the standing grain to the action of the cutters"?

A. It does.

Cross-Q. 61. You have stated that you were very familiar with reaping and mowing machines; now, at the date of Hoffheins' patent of May 20th, 1862, and for a few years before that, was not the well-known "Hussey cutting apparatus," which was composed of a finger-beam, guard-finger, and a series of blades attached to a cutter-bar in common use, and in fact in almost universal use, to the exclusion of all others, upon reaping and mowing machines?

A. If it be assumed, as stated in the question, that the finger-beam is a part of the cutting apparatus, then such an organization of devices was well known at the time of the Hussey invention, and was in general use at the date of the Hoffheins patent.

Cross-Q. 62. Was it not in almost universal use at the date of the Hoffheins' patent, of May 20th, 1862, and for some years prior thereto?

A. It was.

511 Cross-Q. 63. In this "Hussey cutting apparatus," were not the fingers supported by the finger-beam, they being made fast to it?

A. They were.

Cross-Q. 64. Would this "Hussey cutting apparatus" work without the fingers being supported?

A. It would not.

Cross-Q. 65. At the date of the Hoffheins' patent, May 20th, 1862, and for some years prior thereto, and also subsequent thereto, were not the finger-beams of the Hussey and other cutting apparatus in use upon reaping and mowing machines, sometimes made of wood and sometimes of iron?

A. They were.

Cross-Q. 66. Please examine the wooden bar attached to the front side of the platform, or to which the front side of the platform is

attached, in the Patent Office model of the Hoffheins' patent of May 20th, 1862, complainants' exhibit in this case, and state whether it would be a violent supposition to assume th't the said wooden bar, which I have marked with the letter A, was intended to represent a finger-beam?

A. Whether it would be a violent attempt to represent a finger-beam or not, I am not at present able to state, but I can say this about it: that the said bar marked with the letter A, is nailed fast to the front edge of the platform by five nails driven directly through it—(Complainants' counsel here objects to the answer as not responsive to the question, and insists that the witness shall confine his answers to the questions asked)—into the front edge of the platform, and thereby fastens the platform to the said bar in such a manner that they cannot be separated without rupturing the parts.

Cross-Q. 67. If this bar marked A, was not intended to represent a finger-beam, what was it intended to represent?

A. I suppose it was put there for the purpose of supporting the front edge of the platform, as all platforms in combined harvesters and mowers have a wooden bar at or near the front edge of the platform, for the purpose of supporting the boards that form the platform.

512 Cross-Q. 68. Is it not in the right place for a finger-beam?

A. That I cannot answer, inasmuch as there is no driving mechanism for the cutting apparatus shown in the said model, and therefore I cannot tell whether the said bar is in line with the pitman, or end of the crank-shaft of the machine or not.

Cross-Q. 69. Could you not put upon that model, with your knowledge of the Ball machine, as to which you have testified, a crank-shaft and pitman, which would operate cutters working in fingers supported on the wooden bar, marked A, in the Patent Office model, above referred to?

A. I believe I could, and I could do the same thing with fingers mounted upon the front edge of the platform, without the bar A.

Cross-Q. 70. Referring to the "Defendant's Exhibit, Ball and Butler Patent," concerning which you have testified, is not the finger-beam of the Ball machine, shown in Fig. 3 of that exhibit, substantially the same position, with reference to the other parts of the machine, as the wooden bar, A, upon the Hoffheins Patent Office model, above referred to?

A. The back portion of it is in substantially the same position, but the front edge of the bar in the model does not extend as far forward as the finger-bar represented in the said Ball & Butler exhibit, nor does any portion of the front edge reach sufficiently far forward to receive the fingers, as represented in the said figure referred to in the question, or those portions of the fingers which are represented on the top surface of the finger-bar.

Cross-Q. 71. How much too far back do you judge the front edge of the wooden bar A to be?

A. So far back, as not to form a proper support for the fingers of the cutting apparatus.

Cross-Q. 72. How much too far back is it in inches?

A. That would depend upon the width of the finger-bar and the construction of the cutting apparatus.

Cross-Q. 73. Assume the usual size of a finger-bar and the usual construction of a cutting apparatus and answer the last preceding question?

513 A. The bar marked A in the said model bears no sort of a proportion to any finger-bar with which I am acquainted, for the

reason that it is not tapered from the heel to the outer end and it is more than twice as thick as it should be in proportion to its width at any point in the said bar, and therefore I cannot determine by anything represented in the model what the distance in inches should be.

Cross-Q. 74. Now, do you wish to be understood as stating that the bar A, in the Hoffheins' Patent Office model is in a substantially different position with reference to the other parts of the machine from the finger-beam marked P, in Fig. 3, of the Ball & Butler patent; please answer yes or no.

A. Yes, so far as the front edge of said bar is concerned.

Cross-Q. 75. Question repeated.

A. Yes.

Cross-Q. 76. Is not the machine described in the Hoffheins patent of May 20th, 1862, with which his improvements are combined, a Ball machine such as is represented in the "Defendants' Exhibit, Ball & Butler Patent?"

A. I believe it is.

Cross-Q. 77. With your knowledge of mowing and reaping machines, and with a knowledge of the Ball machine, represented in this Ball & Butler patent and with the directions in the Hoffheins patent of May 20th, 1862, as to cutting apparatus hereinbefore quoted by me, could you not put upon the model a cutting apparatus and finger-beam, assuming the bar A not to represent a finger-beam, without the exercise of any invention on your part?

A. In the first place, I do not find any "directions in the Hoffheins patent," referred to in the question concerning either the structure or location, or the operation of said apparatus, other than what is contained in the following language:

"The cutting apparatus is not represented, and may be constructed and operated in any suitable manner.

514 Which language gives me no information whatever concerning such apparatus or its mode of operation; but with my knowledge of mowing and reaping machines, and with a knowledge of the "Ball machine," as represented in the "Ball & Butler patent," I have no doubt I could apply a cutting apparatus to the model referred to in the question, and, in doing so, would have to apply a finger-beam, which I would place instead of the bar A, as represented in the said model, or in front of the said bar as represented in the said model, and without the exercise of any invention.

Cross-Q. 78. Please assume that the wooden bar A, of the Hoffheins Patent Office model, represents a finger-beam, then could you not, with the aid of the Ball and Butler patent and your knowledge of reaping and mowing machines, apply to it fingers and cutters so as to make a cutting apparatus in front of the platform, without the exercise of any invention whatever?

A. Not so as to make a practical working machine. I could add fingers and cutters on to the front edge of said bar, so as to imitate a machine like a boy's toy, for a cutting apparatus; but, as I have already stated, the said bar is not of the proper shape for a finger-bar, as related to the said machine, and I might just as well assume that I could put fingers and cutters on to the front edge of said platform without the bar A.

Cross-Q. 79. Why would it not operate practically?

A. Because it is not of the proper shape to receive the fingers and the cutters, its front edge not being at a right angle to the frame of the machine.

Cross-Q. 80. How much does it vary from a right angle?

A. Just about the amount that finger-bars are tapered when constructed for mowing and harvesting machines, or just about the amount of taper that is used in placing finger-bars in front of the platforms of such machines.

Cross-Q. 81. Is this your deliberate opinion?

A. It is.

Cross-Q. 82. Was not the "Hussey cutting apparatus," for many years, made with a non-tapering wooden finger-beam, with the fingers rigidly bolted to it?

515 A. I never saw one without taper, and I have seen many hundreds of wooden finger-beams, and all that I ever saw were tapered from the inner shoe to the outer divider.

Adjourned to meet Saturday, October 13th, at 10 a. m.

SATURDAY, *Oct. 13th*, 1877.

Meeting held pursuant to adjournment.

Counsel present as before.

Mr. Eliot resumes:

Cross-Q. 83. Does not the "Defendants' Exhibit, Young Patent" show a non-tapering finger-beam, with the fingers driven into it?

A. That's the way it appears in the drawing.

Cross-Q. 84. Does not the "Defendants' Exhibit, Dorsey Patent" show a non-tapering finger-beam with the fingers secured to it?

A. It is so shown in the drawing.

Cross-Q. 85. Does not the "Defendants' Exhibit, Lindsay Patent of 1860" show a non-tapering finger-beam with the fingers secured to it?

A. It does.

Cross-Q. 86. Does not the "Defendants' Exhibit, Aultman Patent" in the Fig. 1 of the drawings thereof, show the bar marked H, which is not tapering, to be a finger-beam?

A. It does.

Cross-Q. 87. Does not the "Defendants' Exhibit, Miller Patent of 1861" show a non-tapering finger-beam with the fingers secured to it?

A. It does.

Cross-Q. 88. Does not the "Defendants' Exhibit, Brown Patent of 1863" show a non-tapering finger-beam with the fingers attached to it?

A. It does, so far as any fingers are shown as attached to a finger-beam.

516 Cross-Q. 89. Is not the wooden bar A, of the Patent Office model of the Hoffheins patent of May 20th, 1862, a tapering bar, the smaller end being the furthest from the main frame?

A. It is to a very small degree.

Cross-Q. 90. How much do finger-bars usually taper in their length in a full-size machine?

A. Usually from about an inch to an inch and a half from the heel to the point or the small end farthest from the main frame.

Cross-Q. 91. Is not the taper of the wooden bar A of the Hoffheins model in the same direction?

A. I believe it is.

Cross-Q. 92. Is not the cutting apparatus shown on the Ball machine of the "Defendants' Exhibit, Ball and Butler Patent" what is known as a "Hussey cutting apparatus?"

A. It is substantially so.

Cross-Q. 93. Does not the reissue of Hoffheins' patent of May 20th,

1862, describe the wooden bar marked A on the Hoffheins Patent Office model as the finger-beam D?

A. It does.

Cross-Q. 94. Was it not at the close of the Hoffheins patent, and is it not still, a common practice to so construct reaping machines as that when they leave the shop the front of the finger-beam inclines forward as it extends outward, so that when the hinge joints become worn by use the finger-beam will not sag too far back?

A. I believe it was, and is yet, the practice to incline the outer end a little forward, so that when the strain came upon them they would be as nearly as may be at a right angle to the side of the frame.

Cross-Q. 95. Does not the front of the bar A in the Hoffheins Patent Office model so incline forward as it extends outward?

A. It does to a very small degree.

Cross-Q. 96. Do you not find in the Hoffheins Patent Office model of May 20th, 1862, a brass piece extending under the rake-post, and resting partly upon the platform and partly upon the wooden bar A, and secured to the wooden bar by a screw?

517 A. I do.

Cross-Q. 97. Is not this brass piece a support mounted rigidly upon the inner front corner of the platform and upon the heel of the wooden bar A, which I call a finger-beam?

A. It is.

Cross-Q. 98. Does not this brass piece carry the rake-post?

A. Not alone, for if the screw which extends up on the under side through the platform into the lower end of said rake-post were removed, then the principal means of support of the said rake-post is removed, as I have proven, by removing said screw and thereby, finding that the lower end of said post was loosened thereby from the platform.

Cross-Q. 99. If in the said model you were to detach the platform from the wooden bar A would not the inner end or heel of the wooden bar A be the sole support of the rake-post?

The probability is that the post would be removed with the platform, as it is the most firmly attached to it by the screw to which I have just referred in the last answer; but if the post were detached from the platform, and then the platform removed from the said bar, then it would constitute all the support that would be left for sustaining the said post.

Cross-Q. 100. Might not this brass piece on the model be properly called a metal foot-piece?

A. Yes.

Cross-Q. 101. Does not the original Hoffheins patent of 1862, in its drawings and the Patent Office model thereof, show a strong bracket attached to this metal foot-piece, extending beyond the left-hand side-beam of the draught-frame, the letter I not being used to mark it in the original, but only in the reissue?

A. The drawings do not show what said bracket is attached to, but its position and shape correspond with the bracket or arm extending out from the inner side of the rake-post—as shown in the model—is a portion of the brass piece, which is attached upon the inner corner of the platform.

518 Cross-Q. 102. In the construction represented in the model, is not this strong bracket rigidly attached to the inner end or heel of the wooden bar A of said model, which I call the finger-beam?

A. It is attached by a single screw thereto, the same as it is in the

large machines—that is, I mean, there is a single screw passing through a projection of said bracket into the inner end of the said bar, which I do not call a finger-beam but a portion of the platform, as it is nailed firmly to the front edge thereof.

Cross-Q. 103. In your answer to question 5, in chief, you make the following quotation from the reissue of the Hoffheins patents, to wit:

"From this description, it will be seen that the finger-beam, platform, and rake are entirely suspended and braced by devices which can articulate free of the draught-frame, or in other words, these parts in articulating do not tilt the draught-frame."

And then you proceed and say:

"Now, in comparing this language with the specification in the original patent, it will be seen that nearly all of it is injected into the reissue without even a hint of any such functions."

Now, does not the Hoffheins original patent of May 20th, 1862, contain the following statement:

"It will be seen that the platform is so attached and supported so as to permit it to conform with the utmost freedom to inequalities of the surface of the ground."

A. Yes.

Cross-Q. 104. If you were to construct a machine according to the drawings of the original Hoffheins patent of 1862, or according to the model thereof, would not the platform and rake, with the wooden bar A, articulate free of the draught-frame, as stated in the quo-
519 tation from the reissue, which is set forth in the last preceding question?

A. No, not when suspended upon a link, as shown in the original patent.

Cross-Q. 195. Do you mean to say that in the said model the platform and rake and wooden bar A do not articulate free of the draught-frame, when the bracket is suspended from the rear end of the main frame by the link?

A. There is an articulation between them, that is independent of each other, but not free of each other in every respect, as I understand the term.

Cross-Q. 106. As a solicitor of patents, do you not know that the drawings attached to a patent is part of the description theretof?

A. Yes.

Cross-Q. 107. In your answer to question 16, you say:

"There is not in said original patent any description of a cutting apparatus, nor is any device shown or described therein to which it may be attached or secured."

Now, do you not think you were mistaken in making this statement?

A. No; I do not.

Cross-Q. 108. In your answer to question 9, in chief, you make the following statement:

"I have also mentioned and also quoted, from the said reissued patent, to justify what I have just said with reference to the location of the support for the rakes, that it must be within or between the two drive-wheels."

Now, as this statement gives a different location in degree to the link, from that shown in the original patent and model, please quote as your answer to this question the statement in the reissued patent by which you justify your answer above quoted.

A. In addition to what I have quoted concerning said suspen-
520 sion, I will refer to the functions of said suspension set forth in

the following language in the specification of the Hoff heins reissued patent No. 2224:

"The suspension of the rake and reel with the platform and finger-beam by means of the extension I and link or chain transfers the weight upon the draught-frame in such a manner that the said frame is kept square upon the ground."

From which language, taken in connection with the drawings of the reissued patent No. 2224, which show the point of suspension upon the frame to the right of a plane passing through the centre of the rim of the left-hand drive-wheel, I gather the information that it is necessary, if the frame is to be kept square upon the ground, that the weight must be to the right hand at least of the centre of the left-hand drive-wheel, in order that there may be a pressure upon the right-hand portion of the frame.

I also find in the said reissued patent that it says:

"It is important that the great weight of the rake, finger-beam, and platform shall not cause the draught-frame to tilt over on its right-hand drive-wheel by sudden and abrupt motions, but shall tend to insure a square run of the draught-frame upon the ground during the pitching, or rising and falling motions of the finger-beam, platform, and rake, and thus an even and easy draught for the team be secured."

Now, to accomplish such a result, it is manifestly evident to my mind that the point of suspension must be between the drive-wheels or supporting-wheels of the main frame.

It is true that a tilting of the frame over on the right-hand drive-wheel could be prevented, by placing the said point of suspen-
521 sion on the frame at some point to the left of the left-hand drive-wheel, but this would only prevent the "pitching" motion of the machine in its rising action, and not in its "falling motion," as mentioned in the above quotation, but would greatly add to it to cause an increased pitching downwards.

And again the specification also states:

"It is important to have a rake suspended as above stated, in order that it may be applied in connection with the finger-beam and platform, which are hung upon a double hinge joint; I mean by a double hinge joint, that character of connection which allows the cutting apparatus of harvesters to fill up at its outer end on a hinge nearly in line with the heel of the finger-beam, and also allows it to rise bodily at both its inner and outer ends on another joint or yielding connection, which is located some distance to the right of said yielding finger-beam.

Cross-Q. 109. Does not the reissued specification describe the point of suspension in the following words:

"By means of this link or chain, the finger-beam, platform, and rake, although arranged at the left of the left-hand drive-wheel B, can be suspended from a point which is to the right of said left-hand side beam."

And also in another place by the following words:

"A strong bracket, I, is extended beyond the left-hand side beam of the draught-frame."

A. Yes.

Cross-Q. 110. Are not these the only descriptions in the reissued patent which locate the point of suspension, leaving out the drawings?

A. Yes, except what may be inferred from the language concerning the functions or operations to be performed on account of said location.

522 Cross-Q. 111. Do not the drawings in the reissue and the Patent-Office model, and the drawings in the original patent, show the point of suspension to be located according to the description which I have quoted from the reissued patent in cross-question 109, and which you quoted in your answer in-chief, as the foundation of the statement made by you, which is quoted by me in cross-question No. 109?

A. I suppose they do—or substantially so.

Cross-Q. 112. Does not the position of the link between the side of the frame nearest to the platform and the wheel furthest from the platform keep the frame more squarely upon the ground, and lessen the deflections of the rake as compared with a position of the link on the side of the frame nearest the platform?

A. Yes, as I have already testified in previous portions of my testimony, the nearer the said link is carried to a central point between the two supporting-wheels, the better will it keep the frame from tilting.

Cross-Q. 113. Was not the old way in a flexible hinged joint combined machine of suspending the platform from the main frame, to suspend it from the shoe or heel of the cutter-bar, or thereabouts, by a link or chain, to a point on the side beam of the frame nearest the platform, or a projection from that beam towards the platform?

A. There were machines with such suspensions, and I think also there were machines with the suspension made from the coupling-arm to the inner side of the frame.

Cross-Q. 114. In the latter class, did the platform articulate upon the point of suspension, as it does in the Hoffheins', and the defendants' machines?

A. Not upon the link or chain suspension; but upon the inner end of the coupling-arm, where it is attached to the drag-bar, or shoe, or upon the opposite end of the coupling-bar or arm.

Cross.Q. 115. Prior to Hoffheins patent of May 20th, 1862, were not the platforms of reaping machines suspended from the main frame sometimes by a link and sometimes by a chain?

523 A. They were.

Cross-Q. 116. You have said in your examination-in-chief, as I remember (correct me if I mistake you), that in the Hoffheins machine, when a wheel would drop into a hole, the platform would strike the ground and break the link, when a single link is used; now, is it not possible that the platform might articulate on its point of suspension, so that it would not bend or break the link or carry the link up bodily, without articulating upon it, and unhook it?

A. I suppose such a condition might possibly exist; of course, it is based upon the comparative strength of the link, the weight of the platform, the distance of the inner shoe from the left-hand drive-wheel, the comparative weight of the main frame and drive-wheel, and the depth and shape of the hole into which the wheel should drop, and also the manner in which the link is hooked onto the frame.

Cross-Q. 117. You have stated in your examination-in-chief that in the Hoffheins machine the platform and rake were suspended from the main frame at about the worst possible point (correct me if I mistake you). Now, would not a point of suspension from the shoe to the side of the beam of the machine nearest to the platform be a worse point of suspension, and cause more sudden and abrupt deflection of the rakes and platform?

A. When I used the language referred to about the worst possible point of suspension, I included in that answer that it was for the pur-

pose of preventing the too "sudden" or "abrupt" deflection of the raking apparatus and platform, taken in connection with the fact that the platform and the rake are to be so suspended from the main frame, as that their combined weight upon said point of suspension would prevent the tilting of the frame. Now, it is true that if we leave off this last element of advantage in the point of suspension that any point nearer to the platform would be a worse point than immediately in the rear of the supporting or drive wheel.

Cross-Q. 118. Would the defendants' machine as represented
524 in the "Complainants' Exhibit Model of Defendants' Harvester," be a substantially different machine if the rake-post were raised as high as it is in Hoffheins' patent, and the driving shaft of the rake lengthened, and the rake-arms altered, so that the rake would work as it worked before the rake-post was raised?

A. No, it would not.

Cross-Q. 119. Please answer the same question under the supposition that the machine is additionally changed by inclining the rake-post over towards the centre of the main frame.

A. It would still in my opinion be substantially the same machine.

Cross-Q. 120. Was it not common prior to the Hoffheins patent of May 20th, 1862, in a great variety of machines to detach the platform, so as to convert the machine into a mower, and is this not the case in all reaping and mowing machines called combined machines?

A. Yes.

Cross-Q. 121. Do you not understand that it is allowable in a reissued patent for the patentee to re-describe his invention and to include within the description and claims of the patent not only what was well-described before, but whatever else was suggested or substantially indicated in the specification or drawings which properly belonged to the invention as actually made and perfected?

A. That is my understanding.

Cross-Q. 122. Is it not your practice as a solicitor of patents and the common practice to do so?

A. It is.

Cross-Q. 123. Please state in which of the exhibits mentioned and referred to by you in your examination-in-chief, if any, you find substantially the same combinations of devices which are recited in 1st, 9th, 11th, 12th, 14th, 16th, and 19th claims of Hoffheins' reissue No. 2224, or any one of them, so shown or described as to anticipate or invalidate those claims, or any of them, and specify which of the claims, if any, is so anticipated in any one or more of said exhibits.

525 A. Without again referring in detail to the several claims mentioned in the question, and as I now understand the subject, I can say that if said claims be construed to cover the combination of devices, substantially described in the said reissued patent, then I do not find in any of the said exhibits what I regard as substantially the same combinations as specified in the several claims mentioned in the question.

Cross-Q. 124. Please answer the same question in reference to the 1st, 2d, 6th, 7th, and 9th claims of the Hoffheins reissue No. 2490.

A. I can make the same answer as I made to the last previous question.

Cross-Q. 125. You have said something about the rake-arms in the Hoffheins machines switching off or thrashing in two, owing to the rake-post being so high in the air. Are you familiar with the McCormick machine, on which a revolving rake is used, and which rake-

post is carried up so that the cam by which the rake-arms are controlled in their motions is as high or higher than in the Hoffheins machine?

A. I am.

Cross-Q. 126. Does not this McCormick revolving rake reaper have its rakes supported on the platform, and does it not operate well?

A. I believe it has, and does operate well.

Cross-Q. 127. Were you not examined as a witness for the complainant, in a suit brought by the Dorsey Revolving Rake Company against McCormick, for infringement of the patent granted to Owen Dorsey, hereinbefore referred to by you, by making and selling his combined self-raking and mowing machine, referred to in the last preceding question.

A. I was.

Cross-Q. 128. Did you not in that case testify that the said McCormick machine contained the invention set forth in the reissues of said Dorsey patent, and specified in the claims thereof, or some of them, and that the self-raking apparatus of the said McCormick machine was substantially identical with the Dorsey rake?

526 A. I believe I did so testify with reference to some of the claims, but how many of them I do now remember, and also that the self-raking apparatus of the said McCormick machine was substantially identical with the invention specified in the said claims of the said Dorsey reissue.

Cross-Q. 128¼. Were you not also a witness for the complainant in the suit brought by the Dorsey Revolving Rake Company against James S. Marsh, in either the eastern or the western district of Pennsylvania, for an infringement of the Dorsey reissued patent by the said James S. Marsh, in making the combined self-raking reaper and mower manufactured by him?

A. I was.

Cross-Q. 128½. Did you not also in that case testify that the said Marsh machine, so far as the self-raking apparatus thereof was concerned, was substantially identical with the Dorsey rake?

A. I did, so far as pertains to the inventions specified in the claims of the said reissued patent, concerning which I testified; but which one or how many of said claims I do not now remember.

Cross-Q. 129. Have you not in your possession a copy of your testimony in that case, to which you can refer, so as to enumerate the claim of the reissue which you testified were infringed by the Marsh machine?

A. I have not.

Cross-Q. 130. Have you not had in your hands, and referred to it during the time testimony has been taken here at Mr. Harding's office, a printed copy of your testimony in the Marsh case?

A. I had a portion of said testimony a few days ago, in referring to the testimony of Mr. Adam Reese in this case, but the copy belonged to Mr. Reese, and is not now in my possession, nor has not been, except at that one time, and then I did not refer to my own testimony.

Cross-Q. 131. Is not the Dorsey rake what is known as a "diametrical rake," in which the two rakes, on opposite sides, are connected to the same rake-arm or rake-handle, being in that respect like the Hoffheins rake?

A. It is.

527 Cross-Q. 132. Is not the McCormick rake, before referred to, a "radial rake," or one on which the handle only extends to the

rake-post, being in that respect like the defendants' rake in this present case?

A. It is.

Cross-Q. 133. Is not the Marsh rake also a "radial rake," like the defendants' in this case?

A. It is.

Cross-Q. 134. Do not the arms of the Marsh rake, before referred to, rise up as they travel over the main frame, without affecting the position of the other arms, which are actually doing the raking, in the same way that the arms of the defendants' rake in this case rise?

A. They do.

Cross-Q. 135. Can you raise the arm of the Dorsey rake, which is traveling over the main-frame, without showing the corresponding arm which is attached to it down onto the platform?

A. No; you cannot.

Cross-Q. 136. Does the rake described in Hoffheins' original patent of May 20th, 1862, perform any other duty than to gather the grain, press it against the cutters, and sweep it over the platform until it drops off the same?

A. It does not.

Cross-Q. 137. Does the defendants' rake, in this case, perform any other duties than those, and does it not perform those duties?

A. Yes; to both branches of the question.

Cross-Q. 138. Do not the Dorsey, McCormick, and Marsh rakes, before referred to, perform these duties, and no others, when in operation.

A. Yes.

Cross-Q. 139. In the machine of the original Hoffheins patent, and in the reissue thereof, and in the defendants' machine in this case, is there not a rake-support, whose foot or lower part is located at the front corner of the platform nearest the main frame?

A. There is in each of them.

528 Cross-Q. 140. Please look at the model of defendants' machine, Complainant's Exhibit, Model of Defendants' Harvester," and the certified Patent Office models of the Hoffheins' patents of 1862 and 1863, complainant's exhibits in this case, and state whether with an equal amount of rise of the end of the platform furthest from the main frame the rake-post is not more liable to strike the wheel in the defendants' machine than it is in the complainant's?

A. I think it is a little more liable in the same amount of rise to strike the wheel in the defendants' machine than in those represented by the Hoffheins models.

Cross-Q. 141. If the strong bracket shown in the defendants' machine, "Complainant's Exhibit, Model of Defendants' Harvester," through the intervention of which the platform is supported by the main frame were removed and the platform were supported by a link or chain, attached at the lower end directly to the shoe of the machine nearest the main-frame, would not the rake-post be more liable to strike the wheel than it now is, and would not the rake be subject to more violent, sudden, and abrupt deflections in the operation of the machine than when the support bracket is employed?

A. I believe it would; in reply to both branches of the question.

Cross-Q. 142. If there were no tightening pulley on the defendants' machine, to take up the slack when the sprocket-wheel upon the rake-support approaches the sprocket-wheel upon the end of the main axle, would there not be a danger that the links would fail properly to en-

post is carried up so that the cam by which the rake-arms are controlled in their motions is as high or higher than in the Hoffheins machine?

A. I am.

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526 A. I believe I did so testify with reference to some of the claims, but how many of them I do now remember, and also that the self-raking apparatus of the said McCormick machine was substantially identical with the invention specified in the said claims of the said Dorsey reissue.

Cross-Q. 128¼. Were you not also a witness for the complainant in the suit brought by the Dorsey Revolving Rake Company against James S. Marsh, in either the eastern or the western district of Pennsylvania, for an infringement of the Dorsey reissued patent by the said James S. Marsh, in making the combined self-raking reaper and mower manufactured by him?

A. I was.

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A. It does not.

Cross-Q. 137. Does the defendants' rake, in this case, perform any other duties than those, and does it not perform those duties?

A. Yes; to both branches of the question.

Cross-Q. 138. Do not the Dorsey, McCormick, and Marsh rakes, before referred to, perform these duties, and no others, when in operation.

A. Yes.

Cross-Q. 139. In the machine of the original Hoffheins patent, and in the reissue thereof, and in the defendants' machine in this case, is there not a rake-support, whose foot or lower part is located at the front corner of the platform nearest the main frame?

A. There is in each of them.

528 Cross-Q. 140. Please look at the model of defendants' machine, Complainant's Exhibit, Model of Defendants' Harvester," and the certified Patent Office models of the Hoffheins' patents of 1862 and 1863, complainant's exhibits in this case, and state whether with an equal amount of rise of the end of the platform furthest from the main frame the rake-post is not more liable to strike the wheel in the defendants' machine than it is in the complainant's?

A. I think it is a little more liable in the same amount of rise to strike the wheel in the defendants' machine than in those represented by the Hoffheins models.

Cross-Q. 141. If the strong bracket shown in the defendants' machine, "Complainant's Exhibit, Model of Defendants' Harvester," through the intervention of which the platform is supported by the main frame were removed and the platform were supported by a link or chain, attached at the lower end directly to the shoe of the machine nearest the main-frame, would not the rake-post be more liable to strike the wheel than it now is, and would not the rake be subject to more violent, sudden, and abrupt deflections in the operation of the machine than when the support bracket is employed?

A. I believe it would; in reply to both branches of the question.

Cross-Q. 142. If there were no tightening pulley on the defendants' machine, to take up the slack when the sprocket-wheel upon the rake-support approaches the sprocket-wheel upon the end of the main axle, would there not be a danger that the links would fail properly to en-

gage with the sprockets, and so stop the revolution of the rake, under the sudden and severe vibrations to which such machines are subjected when in actual use?

A. I have no doubt there would be danger of the links failing to connect with their sprocket projections, if there were nothing to guide the slack side of the chain belt, but I do not regard it necessary that the slack shall be taken up in the sense of a belt-tightener.

529 Re-examination by Mr. HARDING:

Redirect Q. 143. Please refer to the defendants' "Exhibit Ball & Butler Patent," and state, in comparing said machine, as therein represented in the drawings of said patent, with the complainant's exhibit Patent Office model of 1862, and state whether or not there would be sufficient room in front of the bar A in said model to place a finger-bar and cutting apparatus, such as is represented in the said Ball & Butler patent, and whether or not such place is the proper location for the finger-beam, as compared with the location of the inner end of the coupling-bar, as shown in the Ball & Butler patent?

A. I have made the comparison, and I find that in the Ball & Butler patent the inner end of the coupling-arm which is marked R, in said patent, connect with the inner end of the finger-beam at or near the center of the heel thereof, and therefore in comparing it with the Patent Office model referred to in the question, if the point of connection of the coupling-arm with the drag-bar be taken as a point of location, then there is abundant room in said model to put a finger-bar and a cutting apparatus in front of the wooden bar A; and such place would be the proper place for locating the finger-bar and cutting apparatus, if the said joint connection of the coupling-arm be taken as a standard for locating it.

J. BOYD ELIOT.

Sworn to and subscribed before me October 13th, A. D. 1877.

SAMUEL E. CAVIN,
Notary Public and Special Examiner.

530 D. L. SMYSER, a witness on part of defendants, being duly sworn according to law, in answer to interrogatories propounded by GEORGE HARDING Esqr., of counsel for defendants, deposes and says:

Int. 1. What is your name, age, residence, and occupation?

A. D. L. Smyser; thirty-eight years of age; York, Penn.; I was a farmer when I used this machine; I am now a dealer in flour and grain.

Int. 2. Did you buy a reaping machine of R. Hoffheins like large machine, Exhibit B?

A. Yes, sir; I did buy a machine like that from Mr. Hoffheins, and used it for three years.

Int. 3. When that machine was used for cutting grain, did the driver sit upon the machine?

A. No, sir.

Int. 4. Could he sit upon the machine when it was used for cutting grain, and where did he sit when it was so used?

A. No, sir; when it was so used he sat upon the horses.

Int. 5. When you used the machine for cutting grass, was the rake taken off?

A. Yes, sir.

Int. 6. Did the driver sit upon the machine while it was cutting grass?

A. Yes, sir.

Int. 7. Have you seen other machines of Hoffheins' kind and make in your neighborhood and county in use—I mean like Exhibits A and B?

A. Yes, sir.

Int. 8. Did you ever see the driver sitting upon these machines while it was cutting grain; and, if not, why not?

A. No, sir; if he had the rake would have stripped him off the seat.

Cross-examination waived.

D. L. SMYSER.

Sworn to and subscribed to before me Oct. 1st, 1877.

SAMUEL E. CAVIN,
Notary Public.

531 LEVI STERNBAUGH, a witness on part of defendants, being duly sworn, in answer to interrogatories propounded by GEORGE HARDING, Esqr., deposes and says:

Int. 1. What is your name, age, residence, and occupation?

A. Levi Sternbaugh; age, about fifty years; Paradise Township, York Co., Penn., is my dwelling-place; I am a farmer.

Int. 2. Examine machine Exhibit Large Machine B, and state if you bought that machine of R. Hoffheins, and when?

A. I bought it of R. Hoffheins in 1864. I used it from that time to this harvest.

Int. 3. When that machine was used for cutting grain, did the driver sit upon the machine?

A. No, sir.

Int. 4. Could he have done so?

A. No, sir.

Int. 5. Why not?

A. On account of the rake.

Int. 6. Where did the driver sit when you cut grain?

A. On the horse.

Int. 7. Have you seen Hoffheins' machines in use, like Exhibits A and B, in use in your county, and where did the driver sit when those machines were cutting grain?

A. Yes, sir; the drivers always sat on the horses.

Int. 8. When you used the machine for cutting grass, and where did the driver sit then?

A. We took the rake off, and the driver sometimes sat on the machine and sometimes on the horses.

Int. 9. Have you ever seen one of these machines in use where the driver sat on the machine while cutting grain?

A. No, sir.

And in answer to cross-interrogatories propounded by Mr. Bowman, he saith:

Cross-int. 1. How many horses did you use when cutting grain with your machine?

A. Three or four.

532 Cross-int. 2. In the old Hoffheins machine, such as you had, did the farmers generally, in your county, as far as you know, use four horses in cutting grain?

A. Three and four; sometimes three, sometimes four.

Re-examination:

Redirect 1. Have you not sometimes used two horses to your machine while cutting grain, and the driver sat upon one of the horses because he could not sit upon the machine?

A. For half a day, I would sometimes use two horses with the machine, and then the driver would sit upon one of the horses because he could not sit upon the machine while cutting grain.

LEVI STERNBAUGH.

Sworn to and subscribed before me Oct. 1st, 1877.

SAMUEL E. CAVIN,
Notary Public.

JOHN HOFF, a witness on part of defendants, being duly sworn, deposes and says:

Int. 1. What is your name, age, residence, and occupation?

A. John Hoff; aged fifty-three; I reside in York, Penn.; I am a salesman to sell reapers and agricultural machinery.

Int. 2. You have been farming?

A. Yes, sir.

Int. 3. Have you owned and used a machine of Hoffheins' like Exhibit A, and how long?

A. Yes, sir; I used it two years: during 1867, 1868, and 1869.

Int. 4. Have you owned and used a Hoffheins machine like Exhibit B?

A. Yes, sir. I owned and used one, too, like that for two years?

Int. 5. Who did you buy it of?

533 A. Of Darrone, of Dobby, York Co.

Int. 6. Of whom did you buy machine like Exhibit A?

A. Of Hoffheins, in partnership with Shireman and Meyers. I bought it at their shop in York, in the years 1867 or 1868.

Int. 7. When these machines were used for cutting grain did the driver sit upon the machine?

A. No, sir.

Int. 8. Could he have done so when used for cutting grain?

A. No, sir.

Int. 9. Why?

A. The rake was too low; it would have stripped him off.

Int. 10. Have you acted as agent, and sold machines like either of these exhibits?

A. I sold four or five like Exhibit A. I sold them for Shireman & Meyers. I don't know whether Hoffheins was in there or not that year—in the year 1869.

Int. 11. Could the driver sit upon any of those machines while it was cutting grain?

A. No, sir.

Int. 12. Have you used these machines with two horses in cutting grain, and seen others use them with two horses, and where did the driver sit then?

A. I have used them a couple of times with two horses, and the driver sat upon a horse. I have seen others use them with two horses, when the machine went hard with two horses, the driver sat upon a horse.

Int. 13. When the machine was used for cutting grass, did they take the rake off?

A. Yes, sir.

And in answer to cross-interrogatories propounded by Mr. BOWMAN he saith:

Cross-int. 1. Did you not generally use your Hoffheins machines, of which you have spoken, with three or four horses when you cut grain?

A. Yes, sir; generally.

534 Cross-int. 2. Were these old Hoffheins machines, of which you have spoken, not generally used in cutting grain in York Co. with three or four horses?

A. Yes, sir; those people who had three or four horses used them in cutting grain.

Cross-int. 3. Did you sometimes ride on one of the horses while cutting grass?

A. I have myself cut grass and had three horses in, and I have sat on a horse on the first machine like Exhibit B; that was a heavier machine than Exhibit A.

Cross-int. 4. Did you not also, in using your machine like Exhibit A, sit on one of the horses while mowing?

A. Yes; I have sat that way, too, sometimes, when the weather was very hot.

Re-examination:

Redirect int. 1. When mowing, did you not sometimes sit on the machine?

A. I believe I did not; I always rode on one of the horses.

Redirect int. 2. How about your neighbor when the machine was used for mowing?

A. My brother, when he used it, sat on the machine while it was being used for mowing, and used the lines to drive with.

Redirect int. 3. Have you seen other Hoffheins machines like these exhibits, besides those you owned and sold, and did you ever see the driver sit upon those machines when used for cutting grain?

A. I have seen lots of them; I never saw a driver sit upon any of those machines when used for cutting grain.

Redirect int. 4. Could the driver sit upon any of those machines when used for cutting grain; and, if not, why not?

A. No, sir; because the rake was too low; it would hit him and knock him off right away.

535 Recross-examination:

Recross-int. 1. Have you ever seen any of these Hoffheins machines of which you have spoken in use outside of your county?

A. No, sir; not that I remember.

JOHN HOFF.

Sworn to and subscribed before me October 1st, 1877.

SAMUEL E. CAVIN,
Notary Public.

PETER SHELLENBERGER, a witness on part of defendants, being duly sworn, deposes and says, in answer to interrogatories propounded by Mr. HARDING, as follows:

Int. 1. What is your name, age, residence, and occupation?

A. My name is Peter Schellenberger; I am forty-six; I live in Paradise Township, York County, Penn.; I am a farmer.

Int. 2. Did you own this machine, Exhibit A?

A. Yes, sir.

Int. 3. From whom did you buy it, and when?

A. I bought it of J. H. Shireman, in 1864.
Int. 4. How long did you use it?
A. Ever since.
Int. 5. Could the driver sit upon that machine and drive the horses when it was used for cutting grain?
A. No, sir.
Int. 6. Would the rake hit him?
A. Yes, and knock him off.
Cross-examination waived.

PETER SHELLENBERGER.

Sworn to and subscribed before me Oct. 1st, A. D. 1877.
SAMUEL E. CAVIN,
Notary Public.

536 SOLOMON A. CRIST, a witness on the part of defendants, being duly affirmed, according to law, in answer to interrogatories proposed by Mr. HARDING, deposes and says:

Int. 1. What is your name, age, residence, and occupation?
A. Solomon A. Crist; I am near forty-nine; I live in Paradise Township, York County; I am a farmer.
Int. 2. Did you buy a machine of Mr. Hoffheins, like Exhibit B?
A. I bought a machine of him; it was not quite like that; it was nearly like it.
Int. 3. Could the man sit upon that machine to drive the horses, when it was cutting grain?
A. I never did.
Int. 4. Would the rake hit the driver if he sat upon the machine while it was cutting grain?
A. Yes, sir.

Cross-examination:

Cross-int. 1. When did you buy the machine?
A. In 1862, in June.
Cross-int. 2. What became of this machine?
A. I sold it to R. Hoffheins, the complainant in this case.

SOLOMON A. CRIST.

Affirmed to and subscribed before me, October 1st, A. D. 1877.
SAMUEL E. CAVIN,
Notary Public.

J. L. ENDERS, a witness on the part of defendants, being duly sworn, in answer to interrogatories proposed by Mr. HARDING, deposes and says:

Int. 1. What is your name, age, residence, and occupation?
A. J. L. Enders; I am thirty-eight years old; I live in Paradise Township, York County, Penn.; I am a farmer.
537 Int. 2. Did you own a Hoffheins machine, like Exhibit B?
A. Yes, sir.
Int. 3. Could the driver sit upon that machine, to drive the horses, while it was cutting grain?
A. No, sir.
Int. 4. Would the rake hit him?
A. Yes, sir.
Cross-examination waived.

J. L. ENDERS.

Sworn to and subscribed before me, Oct. 1st, 1877.

SAMUEL E. CAVIN,
Notary Public.

Meeting held at the office of George Harding, esq., No. 900 Chestnut st., Philadelphia, on October 2nd, 1877, pursuant to adjournment.

Present, Samuel A. Bowman, esqr., of counsel for complainants, George Harding, esqr., of counsel for defendants.

JOSEPH H. SHIREMEN, a witness on part of defendants, being produced, sworn, and examined, in answer to interrogatories propounded by Mr. HARDING, deposes, says:

Int. 1. What is your name, age, residence, and occupation?

A. My name is J. H. Shireman; I am forty-nine; residence, York, Pennsylvania; I am a machinist.

Int. 2. Do you know R. Hoffheins, plaintiff, and how long have you known him?

A. Yes, sir; I have known him since 1862.

Int. 3. When did you first see a Hoffheins machine like the model, Patent Office model reissue No. 2224?

A. In August of 1862.

Int. 4. Where was it?

A. It was in the field of Solomon Crist, a farmer in York Co.

538 Int. 5. Were you acquainted with the Ball machine prior to to that time; and, if so, how long?

A. Yes, sir; I saw the Ball machine in 1857; that was only a mower; I saw it frequently from 1859 to 1860.

Int. 6. Had the Ball machine a drag-bar, and double-hinge coupling-arm, as shown in the model?

A. It had in 1859, 1860, and from there on. In 1857, I don't recollect that part of the construction exactly.

Int. 7. Had such machines, on from 1859 and 1860, a seat for the driver on the machine?

A. Yes, sir; for mowing, and also in 1857 for mowing.

Int. 8. Was the seat in that machine located in the same place substantially as shown in Hoffheins' model, Patent Office model reissue, No. 2490?

A. Yes, sir; it was located between the driving wheels on the main frame; some may have been a little further forward, so. , a little further back.

Int. 9. When did you direct your attention, if ever, to the Hoffheins machine with a view to constructing it?

A. I think it was in the early part of the spring of 1864.

Int. 10. Under what circumstances did you then interest yourself?

A. I met Mr. Hoffheins and we had a conversation about reaping and mowing machines, at which time he proposed to license me to build this machine—to which I agreed—it was the style of machine like Exhibit A.

Int. 11. Did he furnish you with a full sized machine to build by; and, if so, when?

A. Yes, sir; he had a machine in Baltimore at the Maryland Institute on exhibition, which he told me I could get for a sample machine to build by; I got the machine from there, I think in the month of May, as near as I can recollect, in 1864.

Int. 12. Had that machine been on exhibition there previously, and how long?

A. I think I saw it in October, 1863.

Int. 13. When was it built?

A. To the best of my knowledge it was built in the summer of 1863, I never asked him particularly that question.

(Answer objected to.)

539 Int. 14. Where is that machine now?

A. This is the machine, Exhibit A.

Int. 15. After getting that machine in spring of 1864, did you build any machines by it; if so, how many?

A. Yes, sir; I did; two is all I recollect.

Int. 16. When were they built?

A. Summer of 1864.

Int. 16½. Were those machines so made that the driver could sit on them while reaping?

A. No, sir; they were not.

Int. 17. What was the purpose of putting a seat on them as shown in that Exhibit "A"?

A. For the driver to ride on for mowing grass, in case he wished to drive with check lines.

Int. 18. When those machines were used for mowing, was the raking and reeling apparatus removed?

A. Yes, sir; it was.

Int. 19. Did Mr. Hoffheins give you any instructions; if so, what, as to arranging the parts so that the driver could drive on the machine while reaping?

A. I don't know that he did, any more than the sample machine.

Int. 20. Could a man ride upon the sample machine and drive the horses while reaping?

A. No, sir; not in my opinion.

Int. 21. Did you visit Hoffheins' shop in 1864, to see the machine he was building that year?

A. Yes, sir; I was there several times.

Int. 22. Did you ever see any machines there so arranged that the driver could sit on the machine while reaping?

A. No, sir; not that I know of—not of this style.

Int. 23. Did you go into partnership with Mr. Hoffheins, and when?

A. Yes, sir; I did in the fall of 1865.

Int. 24. Did you build machines like Exhibit A in company with Mr. Hoffheins; and, if so, how many?

A. Yes, sir; we did—in the harvest of 1866—I don't recollect the exact number, but as near as I can tell somewhere about fifty.

540 Int. 25. After you had gone into partnership with Mr. Hoffheins, did he make any change in the reel-post or driving-wheel in building the machines; and, if so, in what respect?

A. Yes, sir; there was a new set of patterns made, in which the driving-wheel was two or three inches lower, to the best of my recollection, and the reel-post was made some three or four inches shorter, I think.

Int. 26. Why were these changes made?

A. Well, the principal reason, as far as I know, was to have less strain on the racking apparatus.

Int. 27. In what way did this change make less strain?

A. Well, the idea was that the lower the rake-post would be, less strain there would be on the rake-arms and the casting where the rake-arms are fastened to.

Int. 28. Were these parts liable to break?

A. Yes, sir; they were liable to break and particularly to get loose on the revolving shafts where they were fastened.

Int. 29. What did you do with the driver's seat, if anything, which was used by the driver when mowing, at the time of making this change?

A. We took them off, generally.

Int. 30. Why was this?

A. On account of the rake coming in contact frequently with the seat while operating on uneven ground.

Int 31. Did Mr. Hoffheins obtain a patent in 1865 for improvement in reaping machines?

A. I think he did.

(Question and answer objected to as immaterial.)

Int. 32. Did Mr. Hoffheins converse with you, while you were in partnership, with reference to changing the construction of his machine from Exhibit "A," to some other form?

A. Yes, sir.

Int. 33. What was the other form he proposed?

A. We had a conversation in the harvest of 1866 with regard to building the different machines. He proposed building the front-cut machines principally for the next season, to which I objected, as being a partner, on account of their being almost a failure for the past season
541 of 1866, that I preferred building at least half of the style of machine like Exhibit A. I giving my reasons for doing so, and he gave his reasons, therein stating that the front-cut machine was a controllable machine; that is, controllable by the driver for regulating the height of cut, controlling the rake, and so forth, while the machine was in operation, which could not be done with style of machine like Exhibit A, as there was no arrangement for driver to ride on, nor a lever to raise and lower the cutting apparatus, and these features were really demanded in machines at that time.

(Question and answer objected to.)

Int. 34. How many machines did you build for the harvest of 1866, of the new kind, like his patent of 1865?

A. I can't tell you the exact number. I think there were provisions made for a hundred, but they were not all finished.

Int. 35. How many Hoffheins machines have you seen in operation like Exhibit A, and in what different places?

A. I have seen more than fifty of the style of Exhibit A, and over a hundred altogether of the Ball machines with this style of rig on, made by Hoffheins and myself. I saw them in York County, Adams, Cumberland, Dauphin, Lebanon Counties, Penn., and Carroll County, Maryland.

Int. 36. Have you ever seen a Hoffheins machine of this style of rig, as distinguished from his 1865 patent, on which the driver rode while the machine was reaping?

A. No, sir; I did not.

Int. 37. Were you acquainted with the licensees of Hoffheins, and the machines built by them of the kind shown in Exhibit A?

A. I was, I suppose, with greater portion of them. I can't say that I was with all.

Int. 38. Was there a seat arranged on any of the Hoffheins machines, of the kind shown in Exhibit A, as distinguished from his 1865 patent, on which a man could sit and drive while reaping, so far as you ever saw or knew?

542 A. No, sir.

Int. 39. Were you present when photographs of Exhibit A were

taken; and, if so, can you state what Exhibit Photograph No. 1 and No. 2 represent?

(Question objected to.)

A. Yes, sir; I was present when those photographs were taken, and they represent the machine Exhibit A. No. 1 represents the machine all down level on the floor, ready for cutting. No. 2 represents the same machine, with outer end of the platform elevated eight inches and a half from the floor.

Int. 40. Is that or not the usual elevation of the outer end, as compared with the inner, while reaping?

A. Yes, sir; those movements, elevations, occur daily, turning on uneven ground.

(Complainants' counsel notes his objection to the foregoing question and answer, and gives notice that he will insist upon the production of the machine itself in court.

Defendants' counsel, Mr. Harding, states that complainants can have the machine at Cleveland, upon paying expenses of transportation, but that he does not wish to have his testimony exposed to the danger of loss or injury, because of its cumbrous nature.

Complainants' counsel insists that it is not his duty, or that of his client, to pay the expense of transporting the defendants' exhibits.

Mr. Harding states that the exhibits will be kept where they are now, open to the inspection of the complainant, and for the verification by him, through photograph, at any time up to the hearing, but on account of their cumbrousness, he is unwilling to take the responsibility and expense of producing them at the hearing, and if he shall hereafter
543 find it convenient to do so, he will endeavor to do it, without wishing to risk the loss of the deposition by their non-production for any cause.)

Int. 41. Please state what photograph No. 3 represents.

A. No. 3 represents machine Exhibit A, with a man setting on the driver's seat, with the outer end of the platform elevated eight inches and a half, and four inches on the inside; I was present when the photograph was taken.

Int. 42. State whether or not that is a usual position for the machine, while operating in the field.

A. Yes, sir; frequently worse than that yet.

Int. 43. Were these photographs fairly taken?

A. Yes, sir; they were, as far as I know.

(Question and answer objected to.)

Int. 44. Did you superintend or take part in arranging of the machine for those photographs?

A. Yes, sir; I did.

Int. 45. Could you now arrange them in the same positions, if counsel for complainants so desired?

A. Yes, sir, I can, any time when requested.

Int. 46. What are the functions of the three braces which extend from the top of the post to the platform, and to the iron bar and socket, and to the front of the machine?

A. They are intended to support the rake-post, and keep it in its proper position.

And in answer to cross-interrogatories proposed by Mr. BOWMAN, he saith:

Cross-int. 1. Where were you engaged in manufacturing machines, at the time when you took license from Hoffheins, in the spring of 1864?

A. In East Berlin, Adams Co., Penn.

Cross-int. 2. What reaping or mowing machines had you been making in the years 1862 and 1863?

A. I had been making what was called, usually, the Buckeye machine, though I changed it to a rear cut.

544 Cross-int. 3. Were all the Buckeye machines made by you rear-cut machines?

A. No, sir; they were not.

Cross-int. 4. You made them, then, both as front and rear cut machines, did you not?

A. Yes, sir; I did.

Cross-int. 5. How many years did you make this Buckeye machine?

A. I made them from 1858 to 1864.

Cross-int. 6. Did you have a license from any one so to do; and if so, from whom?

A. Yes, sir, I had; from C. Hoffman & Co.

Cross-int. 7. During the years you made the Buckeye machine, it was the leading reaping and mowing machine of the United States, was it not?

A. It was one of the leading machines.

Cross-int. 8. Which were the others?

A. The Hubbard and the Dorsey.

Cross-int. 9. Is the Buckeye reaping-machine, as made by you, was not the cut grain removed from the platform by hand?

A. Yes, sir; all that I made, I believe.

Cross-int. 10. How far is East Berlin, Adams Co., from York, York Co., Penn.?

A. About forty miles.

Cross-int. 11. Do you know when Mr. Hoffheins commenced the manufacture of the reaping-machines at Dover, York Co., Penn.? If so, please state it.

A. I can't tell exactly; I think it was in 1859 or 1860.

Cross-int. 12. How far is Dover from East Berlin?

A. We call it nine miles.

Cross-int. 13. Did not both you and he then sell machines in York Co., Penn'a, in the years 1862 and 1863?

A. Yes, sir; we did.

Cross-int. 14. You have stated that you have known the Ball machine since the year 1857; did you ever see that type of machine with a self-raking apparatus upon it, prior to the time you saw the Hoffheins machine?

A. I don't recollect seeing any Ball machine, having a self-rake on, before I saw the Hoffheins machine.

545 Cross-int. 15. Is the machine, Exhibit A, now in the same condition in all respects as when you obtained it at the Maryland Institute, Baltimore?

A. As far as I know or see, it is, with the exception of one thing; when I sold the machine, the man wanted a little longer cutting apparatus to it, which I put on, just the same style and everything as the one that was on, with the exception of being a little longer.

Cross-int. 16. How much did you add to the length of the cutter?

A. That I don't recollect exactly; I think it was four inches; one knife section; the rakes and paddles I think we made as much longer as the cutting apparatus.

Cross-int. 17. In making these changes did you remove the rake-post from the platform?

A. Of course we took it off.

Cross-int. 18. Did you or did you not shorten or make any other change in the rake-post?

A. I can't recollect whether there was any changes made about the rake-post or not; not to my recollection at this time.

Cross-int. 19. Do you not remember that you made, or had made, this rake-post shorter so as to lower the rake?

A. I can't say positively that I recollect anything about shortening the post; I may have.

Cross-int. 20. In the machine, Exhibit A, is there not two locations provided for a driver's seat?

A. Yes, sir.

Cross-int. 21. One location is in front and the other in the rear of the axle of the driving wheels, are they not?

A. Yes, sir.

Cross-int. 22. Is not the driver's seat, when located in front of the axle of the driving wheels, considerably lower than when it is located in the rear of the axle of the driving wheels?

A. Yes, sir; on this machine.

Cross-int. 23. In the photographs of this machine, identified by you as photographs one, two, and three, is not the driver's seat located in rear of the axle of the driving-wheels?

546 A. Yes, sir.

Cross-int. 24. Is this a fair representation of that machine as respects a driver's seat for use, when it is reaping?

A. Well, I don't know but what the other seat is a better location in one respect for the driver to sit on—it was an oversight, or rather forgotten, to take a view with the man on that front seat until this morning, when I told Mr. Eliot and Mr. Harding that we wanted another photograph taken in that position.

(Mr. Harding here states that what the witness states as to him is true, and he proposes to have the other photograph taken if an op'ortunity occurs during the recess.)

Cross-int. 25. When were these photographs taken?

A. On Saturday, September 8th, 1877.

Cross-int. 26. Who was present when they were taken?

A. Myself, Mr. Eliot, and a laborer, and the photographer.

Cross-int. 27. Was not this machine, Exhibit A, exhibited at the York and other fairs in the year 1863?

A. It may have been, but I don't recollect any particular place of seeing it.

Cross-int. 28. Who obtained the machine, Exhibit A, from Mr. Shellenberger?

A. I did.

Cross-int. 29. When?

A. This summer; I think in June some time.

Cross-int. 30. What did you give him for it?

A. I gave him another machine for it; I traded him a new machine for this machine, and the balance to be paid in money.

Cross-int. 31. Whose make of machine did you trade with him for it?

A. A Johnston.

Cross-int. 32. What is the price of the Johnston machine?

547 A. The fixed price in the spring was one hundred and eighty dollars, with a double cutting apparatus the same as he got.

Cross-int. 33. What boot did Mr. Shellenberger agree to give?

A. One hundred dollars cash.

Cross-int. 34. Did you not try to trade with Mr. Shellenberger for this machine, Exhibit A, the previous season?

A. I think I asked him once about trading for it.

Cross-int. 35. Did he not decline?

A. I think he did, for the reason that he couldn't afford to get another machine.

Cross-int. 36. Did Shellenberger use Exhibit A to cut his grain in the season of 1876?

A. Well, I didn't ask him; I don't know.

Cross-int. 37. Were the wide boards which are now upon the reel of the rake and reel paddles of the machine, Exhibit A, on it when you got it from the Maryland Institute, Baltimore?

A. I don't think they were; I couldn't swear positively, but I am satisfied they weren't on when I got it, and I don't know who put them on, if they were put on since.

Cross-int. 38. Was not this machine, Exhibit A, when you obtained it from the institute, Baltimore, provided with a step upon which the feet of the driver could rest when sitting upon the seat when located in front of the axle of the driving-wheels?

A. I don't recollect of ever seeing anything of that kind with the machine when I got it; Mr. Shellenberger got all that belonged to it, as far as I know, when it came, and I asked him particularly when I bought the machine from him if everything was with the machine when I got it; he said it was.

(All that part of the answer relating to the witness' conversation with Shellenberger is objected to by Mr. Bowman, complainants' counsel, as not responsive to the question.)

Cross-int. 39. Who obtained the machine, Exhibit B, from Mr. Sternbaugh?

548 A. I did.

Cross-int. 40. When?

A. In September, 1877.

Cross-int. 41. What did you give him for it?

A. I traded him a new Johnston machine for one hundred and fifteen dollars and his old machine.

Cross-int. 42. Are you the general agent for the State of Pennsylvania for Johnston's reapers and mowers?

A. Yes, sir; I am for the eastern part of the State, not for the western.

Cross-int. 43. How long have you been so?

A. Since 1875. I sold some of these machines in 1874, but not as general agent.

Cross-int. 44. At whose request did you trade Johnston's machine for these exhibits, "A" and "B"?

A. Mr. Harding ordered me to get those machines, and the trading part of the new machines for the old ones was done by myself.

Cross-int. 45. Have you paid the Johnston company for the machines you traded?

A. The business is not settled up yet.

Cross-int. 46. You have been otherwise engaged in assisting the defendants to procure evidence in this case, have you not?

A. Yes, sir; some little.

J. H. SHIREMAN.

Sworn to and subscribed before me October 2d, 1877.

SAMUEL E. CAVIN,
Special Examiner, Notary Public.

A. Of course we took it off.

Cross-int. 18. Did you or did you not shorten or make any other change in the rake-post?

A. I can't recollect whether there was any changes made about the rake-post or not; not to my recollection at this time.

Cross-int. 19. Do you not remember that you made, or had made, this rake-post shorter so as to lower the rake?

A. I can't say positively that I recollect anything about shortening the post; I may have.

Cross-int. 20. In the machine, Exhibit A, is there not two locations provided for a driver's seat?

A. Yes, sir.

Cross-int. 21. One location is in front and the other in the rear of the axle of the driving wheels, are they not?

A. Yes, sir.

Cross-int. 22. Is not the driver's seat, when located in front of the axle of the driving wheels, considerably lower than when it is located in the rear of the axle of the driving wheels?

A. Yes, sir; on this machine.

Cross-int. 23. In the photographs of this machine, identified by you as photographs one, two, and three, is not the driver's seat located in rear of the axle of the driving-wheels?

546 A. Yes, sir.

Cross-int. 24. Is this a fair representation of that machine as respects a driver's seat for use, when it is reaping?

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A. Myself, Mr. Eliot, and a laborer, and the photographer.

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A. It may have been, but I don't recollect any particular place of seeing it.

Cross-int. 28. Who obtained the machine, Exhibit A, from Mr. Shellenberger?

A. I did.

Cross-int. 29. When?

A. This summer; I think in June some time.

Cross-int. 30. What did you give him for it?

A. I gave him another machine for it; I traded him a new machine for this machine, and the balance to be paid in money.

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Cross-int. 34. Did you not try to trade with Mr. Shellenberger for this machine, Exhibit A, the previous season?

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Cross-int. 35. Did he not decline?

A. I think he did, for the reason that he couldn't afford to get another machine.

Cross-int. 36. Did Shellenberger use Exhibit A to cut his grain in the season of 1876?

A. Well, I didn't ask him; I don't know.

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A. I don't think they were; I couldn't swear positively, but I am satisfied they weren't on when I got it, and I don't know who put them on, if they were put on since.

Cross-int. 38. Was not this machine, Exhibit A, when you obtained it from the institute, Baltimore, provided with a step upon which the feet of the driver could rest when sitting upon the seat when located in front of the axle of the driving-wheels?

A. I don't recollect of ever seeing anything of that kind with the machine when I got it; Mr. Shellenberger got all that belonged to it, as far as I know, when it came, and I asked him particularly when I bought the machine from him if everything was with the machine when I got it; he said it was.

(All that part of the answer relating to the witness' conversation with Shellenberger is objected to by Mr. Bowman, complainants' counsel, as not responsive to the question.)

Cross-int. 39. Who obtained the machine, Exhibit B, from Mr. Sternbaugh?

548 A. I did.

Cross-int. 40. When?

A. In September, 1877.

Cross-int. 41. What did you give him for it?

A. I traded him a new Johnston machine for one hundred and fifteen dollars and his old machine.

Cross-int. 42. Are you the general agent for the State of Pennsylvania for Johnston's reapers and mowers?

A. Yes, sir; I am for the eastern part of the State, not for the western.

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A. Since 1875. I sold some of these machines in 1874, but not as general agent.

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A. Mr. Harding ordered me to get those machines, and the trading part of the new machines for the old ones was done by myself.

Cross-int. 45. Have you paid the Johnston company for the machines you traded?

A. The business is not settled up yet.

Cross-int. 46. You have been otherwise engaged in assisting the defendants to procure evidence in this case, have you not?

A. Yes, sir; some little.

J. H. SHIREMAN.

Sworn to and subscribed before me October 2d, 1877.

SAMUEL E. CAVIN,
Special Examiner, Notary Public.

Re-examined:

Redirect int. 1. Have you seen the Hoffheins' machine like Exhibit "A" operated, so that the rake would strike the driving-wheel?

A. Yes, sir; I did, frequently.

Redirect 2. When you built machines like the model machine Exhibit "A," did you or not put the front attachment or seat-support on?

A. No, sir; I did not.

549 Redirect 3. Why not?

(Question objected to.)

A. For the reason that nobody could ride on it, to operate the machine while cutting grain.

Redirect 4. Did Hoffheins, while in partnership with you, or not, put that front seat projection on the machine like Exhibit A, which you or the firm built?

A. No, sir; we did not.

Redirect 5. You have said that the post on Exhibit "A" may have been lowered when it was sold to Shillenberger, about four inches; if so lowered, why was it done?

(Question objected to.)

A. I don't recollect of its being lowered, but if it was I am satisfied that it was done by instructions from Mr. Hoffhein.

(Complainants' counsel objects to the answer because it is not testimony, but a mere process of reasoning, entered upon by a witness who disclaims any recollection.)

Redirect 6. State whether or not there was anything in the construction of the machine and its operation which required the post to be limited in its height.

(Objected to as leading.)

A. The only reason that I know of was to keep the rake-post as short as possible, to relieve the great strain on the rakes and their connections from breaking, and also to be less strain in forcing the rake-post out of its natural position.

Redirect 7. I observe on Exhibit "A" and on Exhibit "B" a movable weight attached to the end of the tongue; why was that put there?

A. It was to counterbalance the machine—to keep the platform and cutting apparatus at its fixed height to cut—as without the
550 weight the platform and cutting apparatus would have dragged on the ground all the time.

Redirect 8. Were these weights placed on any of the machines built by Mr. Hoffheins or not?

A. I think they were on all that I ever saw of the style of machine like Exhibits "A" and Exhibit "B."

Recross-examination by Mr. BOWMAN:

Recross 1. If the rake-post, in Exhibit "A," was shortened by you, was it so done before or after the sale to Shillenberger?

A. I think it would have been done before the sale to Shillenberger.

Recross 2. Was the cutting apparatus lengthened before or after the sale to Shillenberger?

A. The sale was made to Shillenberger, and the cutting apparatus lengthened before he took the machine out, to the best of my recollection.

Recross 3. The cutting apparatus was lengthened, then, after the sale to Shillenberger, and before he took the machine, was it?

A. Yes, sir; to the best of my recollection. Shillenberger contracted

to take the machine with the understanding that the cutting apparatus be lengthened before he took the machine out.

Recross 4. This was also the case with the lengthening of the rakes of which you have spoken, was it not?

A. I think it was.

Recross 5. Did you not also make new rake arms?

A. That I don't recollect; whether we made new ones or whether we just changed them to suit the case.

Recross 6. Did you make the new arms, or change them to suit the case, at the same time you lengthened the cutting apparatus and the rakes?

A. I suppose we did.

Re-redirect examination by Mr. HARDING:

Re-redirect 1. On that machine, Exhibit "A," as you obtained it from Mr. Hoffheins, could a man sit upon it and drive the horses when reaping?

551 A. No, sir; not as for cutting on uneven ground, nor do I think under any other circumstances.

Re-recross-examination by Mr. BOWMAN:

Re-recross Q. 1. Was the machine "Exhibit A" ever used for cutting grain or grass prior to the sale to Shillenberger?

A. Not to my knowledge.

Re-recross Q. 2. Prior to the sale to Shillenberger, had you ever seen any one attempt to ride on one by sitting on the seat while the rake was in motion?

A. No, sir; I had not.

Re-recross Q. 3. As you cannot recollect whether or not the rake-post was shortened, can you state the precise extent which it was shortened if it was reduced in length?

A. I couldn't tell to the half inch, but Hoffheins told me that this style of machine, which we made while we were in partnership, was cut about three or four inches lower than what they had ever been before.

Re-recross Q. 4. Is this the only means you have of fixing the extent which you lowered the rake-post, if you did so?

A. Principally so; yes, sir; I said the post, and I am satisfied that it couldn't have been much longer than three or four inches on this machine, Exhibit "A."

Re-recross Q. 5. Your better recollection is that you shortened it, or had it shortened, isn't it?

A. I rather think it was shortened, but I couldn't swear positively.

Re-re-redirect examination by Mr. HARDING:

Re-re-re Q. 1. What was the purpose of the rear seat on Exhibit A?

A. It was placed on for the driver to ride on while mowing grass, to use the check lines.

Re-re-re Q. 2. Was there an apparatus on Exhibit A by which the driver could raise and lower the cutting apparatus when the machine was used for mowing?

552 A. Yes, sir; there is a lever apparatus on the machine.

Re-re-re Q. 3. Was the rake to be removed at that time?

A. Yes, sir.

J. H. SHIREMAN.

Sworn to and subscribed before me October 3rd, 1877.

SAMUEL E. CAVIN,
Special Examiner and Notary Public.

Mr. Harding offers in evidence Defendants' Exhibit, Photograph No. 1, Defendants' Exhibit, Photograph No. 2, Defendants' Exhibit, Photograph No. 3.

ROBERT BROWN, a witness on part of defendants, being produced, sworn, and examined, in answer to interrogatories propounded by Mr. Harding, deposes and says:

Int. 1. What is your name, age, residence, and occupation?

A. My name is Robert Brown; I am fifty years of age; I reside in Dayton, Ohio; I am a pattern maker.

Int. 2. When and where did you first become acquainted with reading-machines?

A. In 1855; in Howard County, Md.

Int. 3. Did you work for or aid Owen Dorsey, of that place; if so, when?

A. I worked for him and helped him in his machines; helped him to make it and get it out to the harvest field; in the harvest of 1855.

Int. 4. How long did you work there, and where did you go from there, and when?

A. I was there from that time up to after the harvest of 1856; I went from there to Zanesville, Ohio, in December, 1856.

553 Int. 5. Where did you go from Zanesville, and when?

A. I remained at Zanesville until the next September, and returned back to Dorsey's place in Howard Co., Md.

Int. 6. Did you ever work for Mr. Calvin Page, and when and where?

A. I went to work for him in September, I think, 1858, at Frederick, Md.

Int. 7. Examine model shown you, marked Brown Model 1, and state if Mr. Page built machines like that; if so, when?

(Question objected to as leading.)

Int. 8. Examine Brown Model No. 1, and state if you know what that represents?

A. That represents the machine that Dorsey built himself; Page built it; Prince and Coons built it.

Int. 9. When did Page build a machine like that?

A. In 1859 and 1860.

Int. 10. Did you ever apply a rake, such as is shown in that model, to a combined reaping and mowing machine; and, if so, when?

A. I did in 1860, I think; I know it was then.

Int. 11. Describe the machine to which you applied that rake.

A. It was a two-wheel machine, with a wood frame and a hinge cutting apparatus. The cutter-bar and raking apparatus was attached to a rock-shaft; that formed the hinge.

Int. 12. Please examine Model Brown No. 2, now shown you, and state how it corresponds with that machine.

A. It is just the same as that, except the wooden frame. The first machine I made had a wooden frame. This exhibit model has an iron frame. This model has an attachment of Adam Pritzs' for carrying the reel-arms. I allude now to the head to which the reel-arms are attached. That was not on my first machine. I used the device shown in Exhibit Brown Model No. 1 for hinging the rake-arms.

554 Int. 13. When did you commence the construction of that first machine, when was it finished, and what became of it?

A. I made a model, a rough wood model, in the winter of 1859 and 1860. I completed a full size machine in September, 1860, and operated it and exhibited at the Maryland Fair in the same year. It was

sold and used in the next harvest and for several harvests afterwards—five or six, as I understood.

Int. 14. Did you ever hear any complaint about the machine?

(Question objected to.)

A. I did not.

Int. 15. Were machines such as you described, or like it, built; and, if so, to what extent?

A. There was but one made with a wooden frame; they were changed to a metal frame; the frame was made in two parts, and the axles of the driving-wheels being secured to the front part; the rear frame hinged on the cross-shaft, extending backwards far enough to receive the rock-shaft, it being hinged in the rear frame; the cutter-bar and raking-apparatus was attached to it; that formed the hinge of the cutting and raking apparatus; the rear frame was suspended by a chain to a brace, secured to the front frame; the height of the cut was regulated by raising or lowering the rear frame by means of this chain being hooked up or down as needed. I dispensed with the sector plates in raising and lowering the machine. I had a seat for mowing on that machine that I removed when I used the raking apparatus for reaping. I think there was about ten of this last machine made in 1861, and up to the harvest of 1862 there was about forty of them made.

Int. 16. Can you produce a model illustrating the change made which you have just described?

A. Yes; I have a model which I made. Witness produces model, which is marked "Exhibit Brown Model No. III."

Int. 17. Explain this model and point out the difference between it and Exhibit Brown No. II.

555 A. No. II has not the rear swinging frame—it has not the seat supports to support and hold the rear frame, nor a chain to regulate the height of the cut. No. II has a frame all in one piece, with sector plates to regulate the height of the cut.

Int. 18. Where was the rake located on the machine of which Exhibit Brown III represents the frame?

A. The rake was located on the rock-shaft that carries the cutter-bar at the point A—the cutter-bar and raking apparatus were all attached to the rear hinged frame.

Int. 19. Was that machine used as a mower as well as a reaper; and, if so, what parts were removed or detached to convert it from a reaper to a mower?

A. Yes, sir; it was used both as a mower and a reaper. The rake was removed when it was to be used as a mower and you put on the driver's seat. The chain was unhooked and allowed to hang loose so that the bar could follow the unevenness of the ground. When you changed from a mower to a reaper you removed the seat, put on the rake and platform—the machine was adjusted to its height for cutting by means of the chain hooking it up or down, and you were ready for reaping.

Int. 20. How did the machine work, built upon this plan?

A. They were satisfactory.

Int. 21. When did you attach revolving rake to the jointed frame, or double-frame machine like Exhibit 3, and when did you complete a machine with a rake so attached?

A. I attached the rake to that and operated with it in 1861—in the harvest of 1861. I made the patterns for that frame in 1860 and 1861, through the winter.

Int. 22. What was your object in getting up this jointed or double

frame machine, like Exhibit 3, after you had gotten up the single-frame machine like Exhibit 2?

(Question objected to.)

A. My object was to get a more complete mowing machine, and also a more complete combined machine. The raking apparatus and
556 platform was well supported for reaping, and was more easily adjusted than the single-frame machine in the platform being raised and lowered and hooked up by the chain; and in the mowing device the rear frame was lowered down by loosening the frame, and it being flexible the cutter-bar could accommodate itself to the unevenness of ground more easily than it could in a single frame. In the single frame it was raised and lowered by means of the sector plates, and the frame was let down, and the sector plates had to be secured fast to the main frame which rendered it rigid, so that it could not raise up to accommodate the movement of the cutter-bar over the unevenness of the ground.

Int. 23. How did this machine operate when you tried it in the harvest of 1861?

A. It operated satisfactorily both in reaping and mowing.

Int. 24. When did you leave Frederick, and where did you go?

A. I left Frederick in September, 1862, and moved to Newark, Ohio.

Int. 25. In answer 13, you say you only built one machine like Exhibit 2 with a wooden frame; were any machines built like Exhibit 2 with a single frame made of metal, and having the rake head, as shown in Exhibit 2?

(Objected to as leading.)

A. There was machines built,

Int. 26. How many were built like that, and where?

A. They were built by Adam Pritz & Sons, at Dayton, Ohio. As far as I can judge, there was from two to three thousand built with the rake and reel attachments as in Exhibit 2, and with the frame arranged as in that exhibit.

Int. 27. Was there a mower seat on those machines, as in Exhibit 2, with an iron frame?

A. Yes, there was.

Int. 28. Did you devise a modification of that machine, to enable the driver to sit upon the machine while it was cutting grain?

A. I did.

557 Int. 29. What modification did you devise, and when?

A. I constructed the rakes so that in passing around they would come up and pass the driver; I got up the plan in 1862 and 1863, in the winter, and put a full-sized machine at work in the harvest of 1863.

Int. 30. Describe how the rake and reel-arms were attached to the head, to enable this result to be accomplished, viz, the driver to sit upon the machine while it was cutting grain?

A. The rake and reel-arms were independently hinged to a head or crown wheel, with a standard or shaft passing through the centre of the wheel or head, providing it with a journal or bearing to run on, and on the top of said standard, above the head or crown-head was secured a cam or guide, to guide the inner ends of the rake-arms and reel-arms, the ends of which are provided with rollers, which traverse the under side of the cam, giving the rake and reel arms the motion while in operation.

Int. 31. Had said machine, which you tried in 1863, a mower-seat as well as a reaper-seat; and, if so, what was the relative position of the two seats upon the frame?

A. I had a mower-seat. The seat for reaping was situated on the right-hand front corner of the main frame; the mower-seat was located back of the centre of the driving-wheels.

Int. 32. How did that machine operate, and could the driver sit upon that machine in reaping?

A. It operated all satisfactory. The driver could sit there in reaping.

Int. 33. How many machines have been constructed like Exhibit 2, with the modification of the rake and reel arms last described by you, and with the driver's seat on which the driver could sit while the machine was cutting grain, and how lately have they been constructed?

A. Well, I should suppose there has been from two to three thousand constructed from 1865 up to the present date.

Int. 34. Have you good means of knowing how many have been constructed?

558 A. I couldn't say the exact number, but I know there has been from two to five hundred a year made up to 1876; they went off on an improvement of their own then—I mean Pritz & Sons, of Dayton, Ohio. That improvement is in the raking apparatus.

Witness states that when he stated in his examination yesterday that he moved from Frederick, Md., in September, 1862, he was mistaken, the fact being that he left that place about the 8th day of October, 1862.

And in answer to cross-interrogatories, proposed by Mr. BOWMAN, he says:

X-int. 35. You are the patentee of two letters patent for improvements in reaping-machines, granted to you June 18th, 1861, and October 27th, 1863?

A. Yes.

X-int. 36. These are the only patents obtained by you prior to October 27th, 1863, were they not?

A. Yes.

X-int. 37. Do either of these patents show or describe a machine with a swinging frame, like Brown Model No. III?

A. The patent of 1863 shows a frame that will substantially answer all the purposes of this one.

X-int. 38. You included, then, in your patent of October 27th, 1863, the improvement which you made upon your first machine, and embodied in the second full-sized machine, which you say you made for the harvest of 1861?

A. I included the rock-shaft, as I call it, for the attachment of the cutter-bar and the raking apparatus, and supported it on the rear hinged frame, but the rake occupied the same position between the driving-wheels, and the effect and operation was substantially the same, except that the platform and raking and cutting apparatus were more easily adjusted than the single frame—that is, than the first one made.

(Answer objected to as not responsive to the question.)

559 X-int. 39. My question is: Did you describe and include in your patent of October 27th, 1863, the modification of the first machine built by you, which you say you made in the second full-sized machine built by you? Please answer directly.

A. My second patent shows the means of attachment for the raking apparatus and the cutting apparatus which is embodied in the second machine.

X-int. 40. With whom were you working when you built the first ma-

frame machine, like Exhibit 3, after you had gotten up the single-frame machine like Exhibit 2 ?

(Question objected to.)

A. My object was to get a more complete mowing machine, and also a more complete combined machine. The raking apparatus and
556 platform was well supported for reaping, and was more easily adjusted than the single-frame machine in the platform being raised and lowered and hooked up by the chain ; and in the mowing device the rear frame was lowered down by loosening the frame, and it being flexible the cutter-bar could accommodate itself to the unevenness of ground more easily than it could in a single frame. In the single frame it was raised and lowered by means of the sector plates, and the frame was let down, and the sector plates had to be secured fast to the main frame which rendered it rigid, so that it could not raise up to accommodate the movement of the cutter-bar over the unevenness of the ground.

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(Answer objected to as not responsive to the question.)

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A. My second patent shows the means of attachment for the raking apparatus and the cutting apparatus which is embodied in the second machine.

X-int. 40. With whom were you working when you built the first ma-

chine which you have mentioned in your examination-in-chief, which you say you made in 1860?

A. I was working with Calvin Page, of Frederick City, Md.

X-int. 41. Did you make any use of that machine in the field in the year 1860?

A. I didn't cut any grain with it; the grain harvest was over when I got it completed; it was not used in the field in 1860.

X-int. 42. You have heretofore taken some testimony to prove the date when you made the model for that machine, have you not?

A. I have taken testimony.

X-int. 43. Did you not show by that testimony that the model for that machine was incomplete in August, 1860?

A. My testimony shows that the model that was sent to the Patent Office was not finished up to that time. It also shows that I had a model as early as March or April, 1860, as shown to other parties sufficent to show the plan and construction of the machine.

(Answer objected to as not responsive to the question.)

X-int. 44. You have spoken in your testimony-in-chief of but one model for that first machine, have you not?

Counsel for defendants requests the counsel for complainants to point out the part of the testimony to which he refers in his question.

Complainants' counsel declines to do so.

560 A. I have spoken of but one model that I know of in the testimony; the model spoken of here was the first model made to show the plan and devices.

(Complainants' counsel objects to the last sentence, as not being responsiveto the question.)

X-int. 45. Was this model sent to the Patent Office?

A. This model was not sent to the Patent Office.

X-int. 46. Now, my question is, have you not heretofore taken testimony, to show that this rough wood model, of which you have spoken in your examination in-chief, was incomplete in August, 1860?

A. No; I haven't any such thing. The model alluded to in the examination-in-chief is the model that was sent to the Patent Office.

X-int. 47. Where was the first full-sized machine, which you say in your examination-in-chief you built, made?

A. The first full-sized machine was made in Calvin Page's shop, Frederick, Md.

X-int. 48. When and where was Brown model No. 2 made?

A. I don't know exactly when it was made; it was made at Adam Pritz's shop, Dayton, Ohio.

X-int. 49. About when?

A. It was made in 1855.

X-int. 50. Who made this Brown model No. 2?

A. I can't tell who made it; I didn't.

X-int. 51. How, then, do you know it was made in Adam Pritz's shop, at Dayton?

A. It has his improved wheel-head, and the parts are all the same as some dozen he made, and to my knowledge no other parties ever made any of them; if it is labelled so by other parties, it was done for some other purpose.

X-int. 52. When did you first see this model?

A. I first saw it Monday of this week, I believe.

X-int. 53. Who exhibited it to you?

A. George Harding.

X-int. 54. It has upon it, has it not, a printed card "J. P. Smith's

U. S. Patent Office model in wood or metal, machine patterns and experimental machinery," pasted upon the platform?

561 A. Yes, sir; it has that card.

X-int. 55. To whom did you sell this first machine, which you say you built in 1860?

A. I don't know who it was sold to.

X-int. 56. Who sold it?

A. Calvin Page sold it.

X-int. 57. When?

A. In 1861.

X-int. 58. What time in 1861?

A. During the harvest of 1861, I think.

X-int. 59. Did you ever see it after it was sold?

A. I did not.

X-int. 60. Did you ever see anybody use it in the field cutting grain?

A. No; I did not.

X-int. 61. Then you don't know, from your own knowledge, that it ever was used in cutting grain?

A. I know from information.

(Complainants' counsel objects to the answer as not responsive, and asks the witness to confine himself to the questions which are asked him, and repeats the cross-interrogatory No. 61.)

A. I don't know, from my own present knowledge.

X-int. 62. You do not know that it was ever used in the field to cut anything, of your own knowledge, do you?

A. I only know from reports of other parties.

(Complainants' counsel objects to the answer as not responsive.)

X-int. 63. Do you not know what I mean, when I ask whether you know a thing of your own knowledge or not?

A. Yes; I do.

X-int. 64. Then answer whether you know, of your own knowledge, that this machine was ever used in the field to cut anything?

562 A. No; I don't. My recollection is, that I have never said that I did. I have operated it with horses hitched to it.

(Complainants' counsel objects to the answer as not responsive.)

Witness continues: All the parts had perfect movements, and made of material that was used in the general construction of such machines.

(Last objection repeated.)

X-int. 65. Can this machine be produced?

A. I do not know.

X-int. 66. Who besides Calvin Page saw this machine after it was completed and before it was sold?

A. There was a number of persons there that saw it. I couldn't name all of them.

X-int. 67. Name those you remember, with their residences at the time.

A. I name David Haller, of Frederick, Md.; Wm. Mantz, same place; Edward Weinbrenner, same place; John Raulkey, same place. These were men who were around the shop. It was exhibited at the State fair, and I couldn't begin to tell all who saw it.

X-int. 68. Please name the persons who saw the rough wood model, of which you have spoken, before you finished the machine, and give their residences at the time.

A. Owen Dorsey, of Montgomery Co., Md., now of Newark, Ohio. He was all. I showed it to him confidentially.

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A. Owen Dorsey, of Montgomery Co., Md., now of Newark, Ohio. He was all. I showed it to him confidentially.

X-int. 69. When did you show it to him?

A. I showed it to him in March or April of 1860. He was visiting at my house at the time.

X-int. 70. Where were you working when you made the model?

A. I worked with Calvin Page. I made the model at my own house.

X-int. 71. Did you show it to no one besides Owen Dorsey before you completed the full-sized machine?

563 A. I didn't make it a special thing to show it to any one. After I had commenced the machine I didn't pay much attention to the model. The construction of the machine was open to any that chose to look at it.

X-int. 72. Cross-question of 71 repeated.

A. I did not show it to any one, to my recollection.

X-int. 73. Did not Calvin Page see it before you finished the full-sized machine?

A. Calvin Page never saw that model.

X-int. 74. Who helped you build the full-sized machine?

A. I made most of it myself. I don't know particularly who helped me, except the hands about the shop.

X-int. 75. Owen Dorsey is your father-in-law, isn't he?

A. He is.

X-int. 76. Were any of his sons working at Page's shop during this time?

A. One of them came there in August, I think, of 1860.

X-int. 77. Did you show him this rough wood model?

A. I do not recollect whether I did or not.

X-int. 78. What was the full name of this son?

A. Marcellus Dorsey.

X-int. 79. Where is this rough wood model now?

A. Well, I had it burned, with my tool-chest, in Owen Dorsey's shop, in Newark, Ohio; that and all my tools.

X-int. 80. When?

A. I think it was in 1864 or 1865; I am not certain.

X-int. 81. Was it in your tool-chest when it was burnt?

A. It was.

X-int. 82. What was the size of this model?

A. It was about the size of Brown Exhibit, III.

X-int. 83. Was it the model of a complete machine or only parts of one?

A. It had the driving-wheels, frame, rock-shaft, and the cutter-bar attachment, showing the position of the raking attachment. That's as far as I went with that model. It was satisfactory to me to go to work to make a large machine.

(Last sentence objected to as not responsive.)

X-int. 84. Had the model any raking apparatus on it?

A. That model had no raking apparatus on.

564 X-int. 86. Did you ever at any time show this model to Calvin Page?

(Witness desires to continue his answer to cross-interrogatory No. 84. Complainants' counsel objects to any further answer and to the persistent attempt of the witness to put into his answers matter not inquired about in the question.)

Witness continues: It was the principal object to put the rake to it.

Cross-question 86 repeated.

A. I have stated before that I never showed it to him.

X-int. 87. Did he ever see it?

A. Not to my knowledge.

X-int. 88. Where were the ten machines mentioned by you in your answer to int. 15 in-chief, which you say were made in 1861, built?

A. I said I thought there were about that number made in 1861, and I thought about forty up to the harvest of 1862. They were made there at Calvin Page's in Frederick, Md. I am not positive about the number that were made.

X-int. 89. Were they manufactured by Calvin Page?

A. They were.

X-int. 90. Was Calvin Page building these machines when you left Frederick, Md., and removed to Newark, Ohio?

A. He built machines for that harvest of 1862.

X-int. 91. Do you fix the date when they were built by the date of your removal to Newark, Ohio?

A. No; I do not.

X-int. 92. How do you fix the date when these forty machines were built?

A. I remember the years that I lived there, and I know where I made my first machine, and I know that we continued to make some of them as long as I remained there.

565 X-int. 93. What machine do you refer to when you speak of "some of them" in your last answer?

A. I refer to the double-wheel hinged cutter-bar machine with the double-frame arrangement, with the rear frame suspended as in Brown Model III.

X-int. 94. Did you see any of these last mentioned machines in use in the field prior to 1862?

A. I operated two or three of them myself in the field in grass and grain both, whether in 1861 or 1862 I can't positively say.

X-int. 95. Did you see anybody else use any of them in the field prior to 1862?

A. There was one used at a farm south of Frederick, owned by a man by the name of Thomas, in 1861. That was one of the first.

X-int. 96. What do you mean by "one of the first" in your last answer?

A. One of the first made with a suspended rear frame—one of the forty which I have said I thought were made.

X-int. 97. Give the full name of Thomas and the distance from Frederick of his farm.

A. I do not know his full name, but I think it is David Thomas; his farm is three or four miles from Frederick.

X-int. 98. Did you see this machine in use on Thomas' farm?

A. I did.

X-int. 99. When?

A. Cutting wheat in the harvest of 1861, to my best recollection.

X-int. 100. Had Thomas bought the machine at the time you saw it?

A. I cannot say positively, whether he had bought it or whether he had taken it out just to make a trial of it.

X-int. 101. If taken out to make a trial of it, by whom was it taken out?

A. I don't recollect whether he took it out, or whether we took it out ourselves. I know I was in the field with it; Calvin Page was there also.

X-int. 102. Who else were there?

566 A. Thomas was there himself, and the harvest hands. I do not know their names.

X-int. 103. Did you see any other of these forty machines in use in the field prior to 1862?

A. I don't know that I did.

X-int. 104. Where did you see any of them in use in the field in 1862?

A. I saw one at work down on what they call Pipe Creek; I do not know the man's name who owned the farm. I couldn't describe the farm; it was a new country to me, and I was unacquainted with it; it was rather an eastern direction from Frederick, out toward Pennsylvania. I don't recollect of being with any other; I was out very little with them; other parties there and their agents attended to putting them up and operating them.

X-int. 105. Have you ever seen any of these forty machines, which you say were made by Calvin Page in 1861 and 1862, in use in the field since the year 1862?

A. No; I have never been in that country but once since I left there. That was a very short time; I had no chance to see any of them.

X-int. 106. Do you know where any of them now are?

A. I do not.

X-int. 107. Do you know the names of any of the persons to whom they were sold?

A. I do not, unless the Thomas I have spoken of bought the one on his farm, as I was not informed of persons who bought them.

X-int. 108. When did Adam Pritz & Sons, of Dayton, commence to build the machines you have testified in chief were built by them?

A. In 1863 or 1864; I am not certain which; possibly not until 1865.

X-int. 109. In speaking of the machines built by Adam Pritz & Sons in your examination-in-chief, do you refer to the machines built by that firm that are marked with and sold under the name of "Dorsey?"

A. They marked all their machines the "Dorsey" from when they first commenced until the present time, and I refer to the machines so marked.

567 X-int. 110. When was Brown model, No. 3, made?

A. A part of it was made this week, on Tuesday.

X-int. 111. Where?

A. Here in Philadelphia.

X-int. 112. By whom?

A. By myself; at a man's shop named Noble, with his assistance.

X-int. 113. What part of the model was made here last Tuesday?

A. The swinging-frame, and the seat, and the cutter-bar attachment.

X-int. 114. When was the other part of the model made?

A. I don't know when it was made. I picked it up here. It answered the purp'se I wanted, and I used parts of it, and constructed the model No. 3, on exhibit here.

X-int. 115. Whereabouts here did you pick it up?

A. Here in this room.

X-int. 116. This model which you picked up in this room was furnished you to make Brown model No. 3 from, was it not?

A. Yes.

X-int. 117. I notice there is no raking apparatus shown upon your model; was there ever one upon this model No. 3?

A. There never was any upon this model.

X-int. 118. Was there one upon the model furnished you before you changed it?

A. No.

X-int. 119. What had you besides your memory to guide you in altering the model furnished you?

A. I had a drawing from the Patent Office Report of 1863, and also a certified copy of my patent of 1863.

X-int. 120. Did you make the alterations according to the drawings of your patent of 1863?

A. I did, as far as certain parts are concerned.

X-int. 121. What parts?

A. The hinge-frame and the rock-shaft. The rock-shaft in the drawing shows flanges that extend up to attach the rake-frame to, and the braces that support the seat extend further front on the front
568 frame, which does not alter the construction in effect. It also shows a hook on one of them which is intended to hold up the rear frame, the chain being attached to the frame, which can be hooked up to hold the frame at any height which may be desired.

(All the foregoing answer which relates to what the patent shows, is objected to as not being responsive to the question.)

X-int. 122. So far as the swinging-frame, rock-shaft, and cutter-bar are completed in the model, did you make them or intend to make them in accordance with the drawings of your patent of 1863?

A. I did not intend to follow every particular of the patent, my invention being merely to show the suspending of the frame, and the hinging of the cutter-bar.

X-int. 123. Are the suspending of the frame and the hinging of the cutter-bar all the model is designed by you to illustrate?

A. That is all.

X-int. 124. Was not the driver's seat upon the full-sized machine which you say you put at work in the harvest of 1863 located on a timber extending out some distance from the main frame, which timber was attached to the main frame for the purpose of locating a driver's seat upon it?

A. The seat was located on a projection on the frame which is a part of the frame. Wood was substituted afterwards in making the machines.

X-int. 125. What was the length of this metal projection?

A. It did not extend outside of the driving-wheel.

X-int. 126. Question repeated.

A. I do not know the exact length in inches. I never measured it that I remember of.

X-int. 127. Was it as long on the machine you first made, as it was afterwards used in practice?

A. No; it was not.

X-int. 128. Now tell us, as near as you can, how long it was on
569 the machine which you say you used in the harvest of 1863, without regard to whether it was inside or outside of the driving-wheel.

A. I suppose it was about six inches from the body of the frame, out, as near as I can come at it.

X-int. 129. Was this metal projection upon which the seat was located cast separately from the frame?

A. No, it was a part of the frame, solid.

X-int. 130. What was the length of the timber projection which you say was used upon the subsequent machines?

A. It was about twelve or fourteen inches from the inside of the opening in the frame.

X-int. 131. How much longer was it than the metal projection?

A. From eight to ten inches.

X-int. 132. When the timber projection was used, where was the seat located as respects the driving-wheels?

A. It was located in front of the driving-wheel, and nearly outside of it.

X-int. 133. Wasn't it quite outside of the driving-wheel?

A. Not on the first machines.

X-int. 134. It did get entirely outside of the driving-wheel, did it not?

A. I don't know. It might have been changed since I worked with the machines. I have not worked with them in the last five years, and have not noticed them particularly.

X-int. 135. What became of the machine which you say you used, with the driver's seat, in the harvest of 1863?

A. I think it was taken to Adam Pritz & Son's shop.

X-int. 136. When was it taken there?

A. In 1864.

X-int. 137. Where is it now?

A. I don't know.

X-int. 138. When and where did you last see it?

A. I saw it there at the shop in 1864.

X int. 139. Have you not seen it since?

A. Not to my recollection.

X-int. 140. Have you ever looked for it since 1864?

A. No.

X-int. 141. When and where did you use it in the harvest of 1863?

570 A. At Newark, Ohio, on the farm of a man named Penny, I think.

X-int. 142. Whereabouts was his farm, and who was present when you used it?

A. His farm lays near Newark, at the southeastern part of it, and I think he was present himself, and I think Owen Dorsey was present, and one or two others whose names I don't recollect.

X-int. 143. Did you use it anywhere else before taking it to Pritz's shop?

A. No.

X-int. 144. Were the machines with the driver's seat which you say in your examination-in-chief have been made from 1865 up to the present date, the machine called "the Dorsey," made by A. Pritz & Sons, of Dayton, Ohio, and to which you referred in another part of your examination-in-chief?

A. They are the machines. They have changed some parts of it themselves, however, which I had nothing to do with.

X-int. 145. Did you obtain more than one patent under date of October 27th, 1863.

A. I did not.

Re-examination by Mr. HARDING:

Int. 146. How did the gearing for driving and the mode of attaching and supporting the rake in your first wooden machine of 1860 compare with that on the metal machine you built; that you called a double-hinged machine?

(Question objected to as leading, and for other reasons.)

A. The same gearing was used for both; the same mode of attachment; the whole cutting and raking apparatus could be changed from one to the other, without any alteration.

Int. 147. You have said that your first wooden frame machine you built in 1860 was exhibited at the Maryland fair; can you fix the date when that fair was held, and the place?

571 A. The fair was held in the fall of 1860, in September or October, I am not certain which, at Frederick City, Md., on the grounds of the State barracks at that place. I know it was in 1860, because in 1861 the same grounds were occupied by troops, and afterwards built up as a hospital, and was still a hospital when I left there in 1862, and I know there was no fair held there after the troops were quartered there in 1861.

Int. 148. Can you fix the time when you got up your patterns for the hinged-frame machine?

A. I went to work at them soon after the fair was over, and made them through the fall and winter of 1860 and 1861.

Int. 149. What led you to commence making these patterns?

A. I did not like the wood frame, as its bolts were apt to work or get loose; it was more apt to get out of shape, so as to throw the gearing devices out of line and make the machine run or work hard; iron being more substantial, I concluded to adopt that at once without any further experiments with wood.

Int. 150. When did you experiment with a wood-frame machine, and how?

A. In 1860; by hitching horses to it and working it around the fair ground and through the streets.

Int. 151. Did you see the machine of 1863, which had the seat on it, used in any harvest, if so, what harvest?

A. I saw it used in the harvest of 1863.

Int. 152. Did the driver sit on that machine in 1863 while it was cutting grain?

A. He did.

Int. 153. State whether or not your double-hinged machine was arranged for cutting grain only, or cutting both grass and grain.

(Question objected to as leading, and for other reasons.)

A. It was arranged to cut grass and grain both.

Int. 154. How was it with the wooden frame machine?

A. The wooden frame machine would cut grass as any ordinary reaper would; the cutter-bar would not accommodate itself to the unevenness of the ground as the double-frame would, it having only one joint to work on.

572 Int. 155. When you used the hinged-frame machine for cutting grass what change would you make from its condition as a reaper?

A. We removed the raking apparatus when it was used as a mowēr and restored it when it was used as a reaper, as I have stated before.

ROBERT BROWN.

Sworn to and subscribed before me October 5th, 1877.

SAMUEL E. CAVIN,
Notary Public and Special Examiner.

Mr. Harding states that he will give in evidence the copies of the patents.

Mr. Harding offers in evidence Exhibits "Brown Model I, II, and III."

Complainants' counsel objects to the introduction of Exhibits Brown Model II and III for reasons apparent in testimony of Robert Brown,

and to Brown Model III for the further reason that no rake is shown there.

Mr. Harding states, with consent of complainants' counsel, and with similar force as though sworn to, that the model Exhibit Brown Model No. II was obtained by him from Adam Pritz, to use in another case some years ago, and that it becoming broken, and he requested a model-maker to repair it, and that he gummed a label on it at the time; and that to save time in the construction of Exhibit Brown Model No. III he requested Mr. Brown to make use of the débris of the old models, containing wheels and gearing, which he would find accumulated in his collection.

Mr. Harding also offers in evidence Exhibit Model Whitenack.

573 MATTHIAS BRAKELEY, a witness on the part of the defendants, being produced, sworn, and examined, in answer to interrogatories propounded by Mr. HARDING, deposes and says:

Int. 1. What is your name, age, residence, and occupation?

A. Matthias Brakeley; I am thirty-nine years old; my residence is in Warren County, New Jersey; I am a farmer.

Int. 2. Do you know Thomas Whitenack; and, if so, state whether or not you saw him try a harvesting machine with a revolving rake; if so, when and where?

A. I do know Thomas Whitenack. I saw him try a harvesting machine in 1860 on a farm owned by Christopher S. Melick, in Lopatcong Township, Warren County, New Jersey.

Int. 3. Please examine Exhibit Model Whitenack and state whether or not that corresponds or differs with the machine you saw tried.

A. Yes, sir; I think this is the machine of the same kind. The model is the same as the machine. That is the machine he tried, I think.

And in answer to cross-interrogatories proposed by Mr. BOWMAN he says:

Cross-int. 1. Is Thomas Whitenack living?

A. I don't know whether he is living now or not.

Cross-int. 2. Do you not know that he now resides in Raritan, New Jersey?

A. No, sir; I do not.

Cross-int. 3. How far is Raritan from your place of residence?

A. I don't know exactly the distance.

Cross-int. 4. About how far is it?

A. I should say it was fifty miles.

Cross-int. 5. When did you see Thomas Whitenack last?

A. My last recollection of seeing him was when I came to Philadelphia with him in a case about five or six or seven years ago. I can't exactly recollect the time.

574 Cross-int. 6. How often did you see the machine which he tried on Melick's farm in 1860?

A. I was with the machine one-half day. I saw it several times working.

Cross-int. 7. Did you use the machine yourself?

A. No, sir; I did not.

Cross-int. 8. How happened you to be there?

A. We bought a Raritan machine the same year, and I threw off the grain by hand—it was hard work—this rake coming in was something new, and I went there for half a day to see it—the improvements—and how it worked.

Cross-int. 9. Was it the first self-raking reaper you ever saw?

A. It was, with that kind of rake on, a revolving rake.

Cross-int. 10. When next did you see one of these machines?

A. I bought one myself the next year.

Cross-int. 11. Had the machine you bought a driver's seat on it?

A. It had for mowing. I rode a horse for reaping; my machine had a different rake on.

Cross-int. 12. From whom did you buy your machine?

A. Of Christopher S. Melick, of the firm of Melick & Co.

Cross-int. 13. The machine you bought then was not the same machine you had seen tried on Melick's farm the previous year?

A. It was the same kind with the exception of the rake.

Cross-int. 14. In all respects the same excepting the rake?

A. As far as I am able to judge, it was; there may have been a little alteration from year to year.

Cross-int. 15. Is Christopher S. Melick living?

A. He is.

Cross-int. 16. Of whom did Melick buy his machine?

A. It was brought there on trial or experiment. I don't know that he bought it at all.

575 Cross-int. 17. Do you know what became of it?

A. No, sir; I do not.

Cross int. 18. So far as you know, was it ever used after that day you saw it on Melick's farm?

A. It was.

Cross-int. 19. When and where?

A. It was used in cutting oats that season; day after day as they cut their oats; they cut near twenty acres on the Melick farm that same season.

Cross-int. 20. After they were through cutting oats, did Melick retain the machine?

A. That's more than I can answer, sir; I don't know; my impression is, he did not.

Cross-int. 21. You continued to live on the next farm to him, did you not?

A. Yes, sir; I have lived there ever since.

Cross-int. 22. Then don't you know that he did not use the machine on that farm after that season?

A. I don't think he did, sir; I think he got another machine just like it, with the exception of the rake; I think he got a Dorsey rake, the same as I did; his machine was like mine.

Cross-int. 23. Who brought the machine first to Melick's farm in 1860?

A. Mr. Whitenack was there, put up and was attending to it.

Cross-int. 24. By whom did you understand it had been made, and where?

A. My understanding was that it was a machine they were experimenting to make at Phillipsburg.

Cross-int. 25. Was Christopher S. Melick, a partner in the manufacturing firm at Phillipsburg which was experimenting with a view to make these machines?

A. I think he was—I am not positive about that time; he went in somewhere about that time.

Cross-int. 26. Was the driver's seat on your machine arranged the same as on the machine you saw at Melick's in 1860?

A. It was in mowing; it wasn't in reaping; my machine had no seat on, for reaping.

576 Cross-int. 27. In this machine which you saw on Melick's farm in 1860, where did the driver ride when the machine was used to cut oats at Melick's?

A. He rode on a horse.

Redirect by Mr. HARDING:

Did the machine work well?

A. Yes, sir, it did, with the exception of the rake; when you put on those cross-bars from arm to arm then it worked well.

Recross-examination by Mr. BOWMAN:

Recross-int. 1. When they first tried the machine without these cross-bars the rake would not stay on the platform; that is, the grain would lift up the rake, would it not?

A. It wouldn't throw off; the rake would raise over the grain; then they put on the rods, and it would thrust it off.

MATTHIAS BRAKELEY.

Sworn to and subscribed before me Oct. 3d, 1877.

SAMUEL E. CAVIN,
Notary Public, Special Examiner.

JOHN MELICK, a witness on behalf of defendants, being produced, sworn, and examined, in answer to interrogatories propounded by Mr. HARDING, deposes and says:

Int. 1. What is your name, age, residence, and occupation?

A. John Melick; I am sixty-one years old; I reside at Phillipsburg, New Jersey; I am a mechanic.

Int. 2. State whether or not Thomas Whitenack tried a harvester with a revolving rake on any farm owned or worked by you; if so, when and where?

A. He did, in the year 1860, in Lepatcong Township, Warren
577 Co., New Jersey, on a farm worked by me; my brother Christopher S. Melick owned it; generally called Sharps Melick.

Int. 3. Examine the model, Exhibit Whitenack, and state whether or not that corresponds with the machine you saw tried?

A. Yes, sir; that is a model of the machine.

Int. 4. How much grain was cut, and how did it operate?

A. Some 16 or 18 acres; I cannot tell exactly. It operated well.

Cross-examined:

Cross-int. 5. What became of the machine after you quit using it for that season?

A. I returned it to Easton by order of Thomas Whitnack.

Cross int. 6. Did you ever see it afterwards?

A. I did not.

Cross-int. 7. What has been your occupation all your life?

A. It would be hard for me to tell; I have worked at carpentering, farming, and helped work and put up machinery.

Cross-int. 8. What composed the main frame of that machine?

A. It was composed of wood—the frame.

Cross-int. 9. Please describe it.

A. I don't understand how you want it described.

Cross-int. 10. Describe it so as to give us some idea of how it was made.

A. Do you mean the kind of wood, or how the frame was put together?

Cross-int. 11. I mean how it was put together, and the pieces of which it was made.

A. The pieces were made of ash and put together by hand.

Cross-int. 12. In this machine, describe how motion was communicated to the rakes.

A. The witness puts his hand on the main shaft and says it was driven from a sprocket-wheel there, and one there; putting his hand on the rake frame.

578 Cross-int. 13. How many days was it used by you in cutting grain?

A. Well, I couldn't tell exactly how many days it was; I suppose it was used three or four days.

Cross-int. 14. Where did the driver ride when the machine was used to cut grain?

A. He rode a horse.

JOHN MELICK.

Sworn to and subscribed before me October 3d, A. D. 1877.

SAMUEL E. CAVIN,
Special Ex'r and Notary Public.

ADAM R. REESE, being duly sworn, deposes and says, in answer to interrogatives propounded to him by GEORGE HARDING, counsel for defendants, as follows, to wit:

Q. 1. What is your name, age, residence, and occupation?

A. My name is Adam R. Reese; age, fifty-four; past occupation, manufacturing of harvester machines and mowers.

Q. 2. What knowledge have you, if any, on construction of a rake or its use, such as shown in Lewis C. Reese's photograph?

A. I know of such a rake being built, under instructions of Louis C. Reese, and put in the harvest field to work in the summer of 1860.

Q. 3. State whether or not there was a seat for the driver when cutting grain, and if said seat was used by the driver.

A. There was a seat, and used by the driver while cutting grain.

Q. 4. Please examine Exhibit Adam Reese Photograph, and state whether or not such a machine was ever constructed or not to your knowledge?

A. There was such a machine constructed at the shop in Phillipsburg, N. J. I ain't certain of the name of the firm, but I was member of the firm at that time.

579 Q. 5. Do you know by whom said machine was invented or gotten up?

A. I do; it was an invention of my own, gotten up by me.

Q. 6. When was said machine invented or gotten up by you, and state whether or not you described it to any one; if so, to whom?

(Question objected to as incompetent and for other reasons.)

A. The invention of said machine was made by me at the time Louis C. Reese got up his machine, and the explanation made to Andrew Aten, in the fall of the year of 1860, in October or November, by drawings and explanations in such a manner as I gave to him for all of my inventions I make, which he gets up the patterns for.

Q. 9. Did you construct, or was there constructed to your knowledge, a full size machine like that exhibit?

A. There was at the shop in Phillipsburg one of the firm of which I was a member.

Q. 8. When was said machine constructed, and when if ever was it used?

A. It was constructed in eighteen hundred and sixty-three, and put in the harvest field to work in July of that year.

Q. 9. State whether or not such machine had a seat for the driver, and whether or not the driver rode upon the machine when it was used for cutting the grain.

A. The machine had a seat on when in use and the driver rode upon it while cutting grain.

Q. 10. State whether or not the machine had a seat while mowing for the driver to ride on while mowing.

A. The machine had a seat on while mowing and the driver rode upon it while mowing.

Q. 11. State how said seat was arranged in reference to balancing the machine when used as a mower and as a reaper.

A. When mowing, the seat was located in rear of the axle in
580 order to balance the tongue whilst the driver was riding on the seat. The seat was arranged in front of the axle in cutting grain, in order to balance the rake and platform, which was done by the driver while riding on seat whilst cutting grain.

Q. 12. State whether or not machines like that were built during the year eighteen-hundred and sixty-three, and subsequent, by your firm; and if so, how long.

A. Machines of the kind alluded to were built in eighteen sixty-three, and for several years afterwards, until they got to using the rake with a latch to it, in order to regulate the size of the gavel at any distance apart.

Q. 13. How did said machine operate in the harvest of 1863, when cutting grain?

A. Machines worked first rate.

Q. 14. State whether or not the driver, while riding upon the said machine when cutting grain, was interfered with, by the revolving rake-arm.

A. The driver was not interfered with at all while riding on the seat when cutting grain, as rakes passed to one side of him and not over him.

(Complainants' counsel objects to the foregoing testimony, and to the mode of identifying the machine therein adopted, and for the reason that neither of said photographs show the construction of the part of said machine which are involved in this controversy so as to enable complainants to examine witnesses in relation thereto, or intelligently to cross-examine the witness *in*dentifying; and reserving said exceptions, proceeds to cross-examine said witness:)

Cross-Q. Was the rake in the machine referred to *by* in your answer to question two, as machines built under the instructions of Louis C. Reese, mounted upon the main frame?

A. It was.

Cross-Q. Was the platform and the cutting apparatus in said Louis C. Reese machine rigidly attached to the main frame?

A. It was.

581 Cross-Q. Where you engaged in inventing or experimenting with machines in the years 1861 and 1862?

A. In the year 1861 and 1862; I was then putting the Dorsey self-rake on the one-wheel machine, called the N. J. machine, and in making the alterations in the Bullock two-wheel machines. The Bullock machines had a new means of cutting.

(Complainants' counsel objects to all the foregoing answer as not responsive to the question.)

My question is, not what you were doing, but whether or not you were engaged in the years 1861 and 1862 in inventing or experimenting with machines?

A. To the best of my knowledge, I was not inventing machines at that time, but was reconstructing the Bullock machine, and seeing to the manufacturing of the Dorsey machine, and applying it to the N. J. one-wheel machine, and also giving my attention to starting and manufacturing the Ball machine.

(Complainants' counsel objects to all that part of the foregoing answer which relates to the Bullock, Dorsey, one-wheeled, and Ball machines, as not responsive to the question.)

Q. Were you or were you not, in the years 1861 and 1862, engaged in experimenting with machines?

A. None otherwise than those named, to be the best of my knowledge.

Q. Do you mean that you were, or were not engaged in experimenting with machines?

A. I had no machines that I was experimenting with, except those named.

Q. Did you, in those years or not experiment with those machines you have named?

A. I can't call it any experiment. I made the alterations, and the machines worked without any trouble. I would here state that the Bullock machine alluded to, as first made, was an entire failure, and required the alterations I alluded to.

582 Q. Do I understand you, then, to say that in the years 1861 and 1862 you gave no attention either to inventing or experimenting with machines?

A. None further than alluded to in my former answer.

Q. Of what firm were you a member in 1861?

A. I think the name of the firm altered in 1859 from Reese, Gould & Lake to Reese, Lake, Mellick & Co. I am not right positive, but think that was the name at that time.

Q. Why can you not be positive as to who you were in copartnership with the year 1861?

A. There has been so many changes in my partners and in names of firm and company since I have been in business that I cannot give the name of the parties at the different dates without reference to the books.

Q. How many times was your firm changed during the years 1860, 1861, and 1862?

A. I think it did not change in those years.

Q. Then, why can you not be positive as to who you were in partnership with in the year 1861?

A. By my not looking at the books, there might be a mistake in it, although I think I am right.

Q. Name the names of such of the persons as you are certain you were in copartnership with in the year 1860.

A. It was about the year of 1860, '61, or '59, that Christopher C. Melick and Andrew J. Fearon and George Sweeny and George W. Deane came into the company. I don't think they all came in at the same time; and as to the dates at which they each one came in, I am not able to state without reference to the books; but my impression is, that

the company changed from Reese, Lake & Gould to Reese, Lake, Melick & Co. in the fall of 1859. I know I was in the firm in 1860.

Q. Name the names of all the persons you are certain you were in copartnership with in the months of October and November, 1860.

A. Myself, Christopher C. Melick, Andrew J. Fearon, Nelson Lake. My impression is that they were in the company at that time.

583 Q. As to which of them are you certain you were in copartnership with in months of October and November, 1860, and as to which are you in doubt?

A. I would be in doubt with Deane and Sweeny. I think Gould and Lake was in with me and Melick. A reference to the books will show all that. It was just about the time that them changes took place then, that I am not right positive as to the dates.

Q. Can you tell certainly which of the years—1859, 1860, and 1861—it was that your firm was changed?

A. Not any nearer than I have already given.

Q. Why can you not remember in which of these years it was that the firm was changed?

A. I have not tried to impress the matter on my mind at all, is, I suppose, the only reason I can give. I have never considered it of any importance to recollect, whilst referring to the books will show for itself.

Q. Where are the drawings which you say you showed to Andrew Aten?

A. The drawings were made on pieces of board and the bench together, as I make all my drawings and explanations to him for any of my new inventions, and they were never taken care of nor any of my others, until the last week or two. What few drawings I had of my two last inventions, seeing the importance of taking care of them, I have reserved them. None of my others were reserved.

(Answer objected to as not responsive to the question.)

Q. Are the drawings which you say in your examination-in-chief you showed Andrew Aten now in existence or not?

A. They are not, as I have stated before.

Q. What were these drawings made with?

A. I never used anything but pencil and chalk.

Q. Question repeated.

A. Pencil and chalk.

Q. Why did you use pencil and chalk?

A. Chalk would come handy in describing some parts frequently; sometimes pencil.

584 Q. Are you positive that you used both pencil and chalk in the making of these drawings shown to Andrew Aten, as you have stated in your examination-in-chief?

A. I am.

Adjourned until Friday morning at 10 a. m.

ADAM R. REESE.

Sworn to and subscribed before me, Oct. 12th, A. D. 1877.

SAMUEL E. CAVIN,
Notary Public and Special Ex'r.

RUFUS SLIKER, a witness on the part of defendants, being duly sworn and examined, in answer to interrogatories propounded by Mr. Harding, deposes and says:

Q. 1. What is your name, age, residence, and occupation?

A. Rufus Sliker; age 47; occupation, dealing in agricultural implements and mowing machines.

Q. 2. Of what firm were you formerly a member?

A. Of Reese, Melick & Co., and Reese, Staats, Melick & Co.

Q. 3. Did the firm of which you are a member build any machines like the model I have shown you, marked Exhibit Model Whitenack, or were you associated with them in any way?

A. Not while I was a member of the firm, but previous to that, when the firm was Reese, Lake, Melick & Co., they built ten of those machines, in 1861.

Q. 4. Previous to the building of those machines, was a machine like that Model Whitenack tried, and if so, when and where?

A. It was tried above Phillipsburg, on Christopher S. Melick's farm the harvest previous to that.

Q. 5. Were those machines, to which you have referred, so constructed that the driver could sit upon the machine when the rake was on and in use?

A. Yes, sir; they had a seat across the front of the machine, an elliptic spring, on one of the machines.

585 Q. 6. Were seats furnished with those machines?

A. They were with some of them; I was not in the shop when the machines were all shipped.

Q. 7. For what purpose were the arms of the rake in those machines constructed, as shown in that model?

A. For the purprse of putting a seat on for the driver to ride.

Q. 8. State, if you know, what the photograph now shown you represents?

A. It represents Lewis C. Reese's rake.

Q. 9. Did you ever see a rake like that tried; if so, when and on what kind of machine?

(Question objected to.)

A. I saw a rake like that on a machine like Exhibit Whitenack Model; at first I saw it on a machine, to my recollection now, was in the spring of 1860; saw them have it out on the commons there driving it along.

Q. 10. Did you see that machine used with a driver's seat on it at that time?

A. I saw it used at that time with the seat on; that is, it was driving around the commons. Mr. Thomas Reese, that is the man who made it for Lewis, was driving it at that time.

Q. 11. Have you any knowledge of that rake being used on any other machine than like Exhibit Whitenack; and if so, when was it applied, and what knowledge have you of its use?

A. I saw it used on the Beans machine in the harvest of 1861, on the farm of Charles Roberts, in Montgomery Co., Penn.

Q. 12. State what you know about the application of the rake to that machine, and the use thereof.

A. I was on Mr. Paxon's farm, on the adjoining farm, starting one of the New Jersey machines, with the regular Dorsey rakes on it; Mr. Beans and Mr. Thos. B. Reese had brought the Beans machine to Mr. Roberts', and were there starting it with the Reese rakes on; at the same time they came over in the field where I was working the

586 Dorsey rake; Mr. Beans followed the Jersey machine, and he wanted me to go over and look at his machine, as he called it, at Mr. Roberts', to see if it was doing as good work as we were doing with the Dorsey; we went over and looked at it, and followed it around the

field; Mr. Beans came back with me to Mr. Paxon's field, and he stated to me he was building a machine of that kind, and he had expected to get it done for that harvest, but he was afraid he wouldn't get it done in time.

(Complainants' counsel objects to all statements of Mr. Beans, and all conversation of the witnesses with Mr. Beans.)

Q. 13. What knowledge have you of the further use of the Lewis Reese rake?

A. In 1862 that machine was completed and sold to Charles Stackhouse.

Q. 14. Describe the machine that Beans completed and sold to Charles Stackhouse.

A. That machine, the cutter-bar was located within the periphery of the driving-wheel, and in a line or nearly so with the axle; then there was another small carrying-wheel—not a driving-wheel—near where the finger was hinged; the rake-post came down; I think it come down on the inside of the frame and bolted on the finger-beam, and run out half the length of the bar; the rake was the same as the photograph, Exhibit Reese Rake.

Q. 15. Had that machine a seat for the driver?

A. Yes, sir; it had a seat for the driver.

Q. 16. State whether or not the rake rose and fell with the finger-beam on the platform?

(Question objected to as leading.)

A. The rake on that machine did rise and fall with the cutter-bar; was bolted to the cutter-bar.

Q. 17. Was the platform supported in any way from the ground, or not?

(Question objected to as leading.)

587 A. It was bolted fast to the inside of the frame, so as to be raised up and down; that's my recollection of it at this time.

Q. 18. What knowledge of the subsequent use of that machine?

A. It was used up to 1870, I believe, if my memory serves me right, when I traded another machine for it.

Q. 19. Do you know why the rake-arms on the Lewis Reese rake were hinged, as shown in their photograph?

(Objected to.)

A. For the purpose of putting a seat on the machine.

Q. 20. Did the driver sit upon the machine when it was used during the harvest; I mean the Beans machine, the one used down to 1870; I mean while cutting grain?

A. They did ride on the machine. It made a very easy and comfortable seat. I don't presume they rode on it at all times when they used three horses; sometimes they rode the horse.

Q. 21. Can you make, or have made under your direction, a model showing Beans' machine with the Lewis C. Reese rake on, to which you have referred, as having been seen by you in 1862 at work?

A. Yes, sir.

Q. 22. Please have one made as soon as you can.

A. I will do so.

Mr. Harding requests that the cross-examination be postponed until said model is produced, or if the complainants' counsel prefers he can cross-examine the witness as far as the testimony taken.

Complainants' counsel proceeds to cross-examine the witness with the understanding that the model will be produced at Mr. Harding's office on Wednesday, October 24th, with those parts of the old machine from

which it was made, and a full opportunity then and there afforded for the complainant to cross-examine.

Mr. Harding agrees to this.

588 Cross-Q. 24. Was the platform of the machine which you saw used in the harvest of 1861 on the farm of Charles Roberts, in Montgomery County, Penn., which machine is referred to by you in question 11 in-chief, attached rigidly to the main frame?

A. It was.

Cross-Q. 25. How many driving-wheels had this machine?

A. It had one.

Cross-Q. 26. Had it a driver seat on it?

A. It had, sir.

Cross-Q. 27. Did you see the machine, which you say Mr. Beans completed in 1862 and sold to Charles Stackhouse, before it was sold to him?

A. I don't think I did; I don't recollect seeing it till I saw it at work at Mr. Stackhouse in the harvest.

Cross-Q. 28. In the harvest of what year did you see the machine at Mr. Stackhouse?

A. I think it was in '62, to the best of my recollection.

Cross-Q. 29. Whereabouts is the farm of Charles Stackhouse, on which you first saw the machine at work?

A. It is in Horsham Township, Montgomery County; I think it's about 4 to 6 miles northeast from Fort Washington.

Cross-Q. 30. What became of it?

A. I got it of Mr. Stackhouse for another machine, in 1870; if my memory serves me right, that was the year.

Cross-Q. 31. Where is it now?

A. Part of it is at Phillipsburg, in the shed belonging to the Screw Mower and Reaper Company.

Cross-Q. 32. Where the other parts?

A. I can't tell you, sir.

RUFUS SLIKER.

Sworn to and subscribed before me October 13th, A. D. 1877.

SAMUEL E. CAVIN,
Notary Public and Special Examiner.

589 ANDREW ATEN, a witness on part of defendants, being produced, sworn, and examined, in answer to interrogatories propounded by Mr. HARDING, deposes and says:

Q. What is your name, age, residence, and occupation?

A. Andrew Aten; my age is fifty; I am a pattern-maker.

Q. How long have you known Adam R. Reese?

A. Since the year 1850.

Q. Have you any knowledge of Adam R. Reese's inventing an improvement in revolving rakes in connection with hinged-bar machines, harvesters; and, if so, state what knowledge you have?

A. In the fall of 1860 he made known to me an invention of harvesting-rake that I understood by him that he could put it on any machine.

Q. Did he describe his rake or improvement and mode of applying it; and, if so, how?

A. By diagrams made with pencil or chalk.

Q. Did he explain to you where the rake was to be located?

A. He did; on the cutter-bar.

Q. Did he explain to you how the arms of the rake were to move, and did he explain any purpose of his therewith, or object he had in view in reference to the movement of said arms?

A. They were to revolve around a common centre, the cam to carry and direct the arm to gather the grain and rake it off the platform, then to rise up and pass high over the machine.

Q. Did he describe any arrangement to you in connection with the driver's seat?

A. I don't remember anything being said about it at that time.

Q. Was any statement made to you in reference to the purpose the rakes were to have; the movements you have described?

A. I cannot remember at this time.

Q. Have you any knowledge of this invention in connection with Mr. Reese after the fall of 1860?

590 A. In the spring of 1863 we went to work building a full-sized machine, I think about the first of April. We went on and finished the machine on the seventeenth day of July, 1863. On the 18th we gave it a trial.

Q. How did it work?

A. Good.

Q. Were other machines built like it after that trial?

A. Two more that summer.

Q. Were any more similar to that built after that summer?

A. Yes; I might say 1,500, more or less.

Q. When that machine was tried or used in 1863, could the driver ride upon the machine while it was cutting grain?

A. He could. I rode on it myself.

Q. Examine the model now shown you, and marked Exhibit Adam R. Reese Model, and state if you know what that represents.

A. It represents a machine similar to the one used the eighteenth day of July, 1863. There are some little points of difference. The cam-way was double instead of single. The seat sit on a post on the back side of the front cross-piece of the frame.

Q. How about the driving wheels of the rake?

A. That machine had sprocket-wheels on to use straight-linked chains.

Q. How soon after the first machine was the second one built?

A. Within two months.

Q. How was the seat on that machine?

A. Just like Exhibit Adam R. Reese Model.

Q. Do you know whether Mr. R. Hoffheins saw that machine?

A. He did, in 1863, about August or September, at Phillipsburg, at the shop where it was built.

Q. Have you had constructed or prepared a model since you gave your testimony-in-chief; if so, can you produce the same, and state what it represents in reference to your testimony-in-chief?

591 A. I have prepared and now produce a model similar to the machine manufactured by me, and my instruction, and used in the harvest of 1863. There is some parts of the model lacking, and differs in a few respects, of which I will name. The castor-wheel on the outside of the platform is lacking, and the hand-lever for raising and lowering the finger-beam while mowing is not on the model. The platform on the full-sized machine is fastened to the finger-bar by ordinary bolts, while in this model it is attached by thumb-screws.

I also find one of the rakes and rake-arms gone. This model differs from the full-sized machine made at the time named in regard to the sprocket-wheels. These wheels on the model are grooved out smooth

and a strap running in them; in the full-sized machine named by me the sprocket-wheels had projections in the groove directly opposite to each other and far enough apart, so as to fit a straight link chain with lengths about two inches long. The cam or guide to this model differs a little from the cams on the machine alluded to. This cam on the model is doubled opposite to the platform and single on the opposite side of the platform. The cam on the full-sized machine alluded to was double all around. These are the only differences.

Mr. Harding gives in evidence the machine marked Adam R. Reese Model.

(Complainants' counsel objects to the introduction of the model.)

Q. When was this model made?

A. I cannot tell when this model was made. It was some time after the David R. Paiste patent was granted.

Q. About what time was the Paiste patent granted?

A. I think in 1866.

Q. By whom was this model made?

A. I think that Thomas Mason made it in Philadelphia.

Q. What machine was it made to represent?

A. It was made to represent the Ball machine, with my self-rake on it.

Q. For whom was it made by Mr. Mason?

592 A. For the Harvesting Machine Co., of Phillipsburg, New Jersey.

Q. Was it made by Mr. Mason in all respects like the machine which this company was building at the time he made the model?

A. It was, to the best of my knowledge.

Q. From what did Mr. Mason make the model?

A. I was not with Mr. Mason when he made the model. I think Mr. Sliker got him to make the model after one of our Ball machines, with one of my self-rakes on it.

ANDREW ATEN.

Sworn to and subscribed before me Oct. 13th, A. D. 1877.

SAMUEL E. CAVIN,
Notary Public and Special Ex'r.

ROBERT W. BROWN, a witness previously sworn on behalf of the defendants in this cause, is recalled as a witness on the part of the defendants.

Robert W. Browne recalled:

Q. 1. Have you made a model of a rake-stand illustrating the mode in which the rake-stand was attached to the first hinge-joint machine, which was made by you in 1861?

(Question objected to as leading, and other reasons.)

A. I have made a model.

Q. 2. Produce and describe the same.

(Witness produces a model marked Exhibit Brown Model Four.)

A. It is attached by taking away the mowing seat. The rake-stand is then placed against the flanges (the flanges which extend up
593 from the rock-shaft), and then screwed fast to those flanges. There is a brace that extends from the shoe up to the top of the frame.

Q. 3. Have you lately, since testifying, seen that machine; and, if so, when and where?

A. I have seen the machine. I saw it at Frederick, in State of Maryland. I saw it on Thursday last, the 11th of the present month.

Q. 4. What appearance of wear did that machine present?

A. The machine was very much worn, and looked as if it had done several years' work, and was told by the maker of it that it lasted up the harvest of seventy-six ('76).

Q. 5. Can you state more definitely the name of the party to whom it was sold, or by whom it was used, or the date of the sale?

A. I can. The machine was sold and delivered to a man by the name of Samuel Miller on the 19th day of April, eighteen sixty-one.

Q. 6. Have you made any change in Exhibit Brown Model 3? and, if so, state what change you have made.

A. I have made a change. The flanges on the rock-shaft to fasten the rake-frame to, and change the seat supports, and the supports that holds the rear of the frame.

Q. 7. Can you restore the model to its exact condition it was in?

A. I can.

Q. 8. Please do so.

(Mr. Harding states that he will endeavor to have the full machine to be brought here by express, and requests the adjournment of the witness until it arrives, which it will be here in two or three days.

Mr. Harding also wishes to state, to make the rake attachment and explain how it is attached to Exhibit 3, and did not mean to instruct the witness to alter an exhibit in evidence, and desires that the Exhibit 3 shall be restored to its former condition and a duplicate made as it now stands in order that the exact changes may appear by the comparison of the two.

594 Complainants' counsel, before determining whether he will consent to the alteration.

Mr. Harding states that he will have a complete duplicate made of Exhibit 3, as it was, by the witness, before proceeding further with the examination of the witness.)

Cross-examination by Mr. BOWMAN, he consenting that Mr. Harding may resume his examination-in-chief on Monday morning:

Cross-Q. 9. Whereabouts in Frederick City did you see the machine referred to in answer to question 3?

A. I saw it in Calvin Page's shop yard.

Cross-Q. 10. Did you sell and deliver the machine to Samuel Miller in person?

A. I did not sell him the machine. I did help load it in his wagon.

Cross-Q. 11. How do you know that Samuel Miller ever owned or used the machine you say you saw at Calvin Page's shop in Frederick City on Thursday last?

A. Calvin Page's bookkeeper told me that was the same machine.

Cross-Q. 12. When did you go to Frederick?

A. On Thursday last.

Cross-Q. 13. When did you take possession of Def't's Exhibit Brown Model No. 3?

A. I took possession of it to-day, while there was an alteration being made; that is the only time I had possession of it.

Cross-Q. 14. Were you not present last week when Exhibit Brown Model 3 was offered in evidence, and were you not examined as to it?

A. I was present last week when it was offered, and I was examined in regard to it?

Cross-Q. 15. Now, have you not had this model in your possession before it was offered in evidence to-day?

A. I believe I did, while putting these flanges on the rock-shaft.

Cross-Q. 16. When did you do that?

A. I done that last week; last Friday, I think.

595 Cross-Q. 17. You took it, then, the next day after your examination as a witness was concluded, did you not?

A. I believe I did.

Cross-Q. 18. How many days did you keep it in your possession then?

A. I only had it in my possession long enough to put on the flanges; then I brought it back here and set it on this table.

Cross-Q. 19. Question repeated.

A. I don't recollect whether I kept it a day or not.

Cross-Q. 20. When did you next get it, after you brought it and set it on this table in Mr. Harding's office?

A. I got it in the morning, I believe, about nine o'clock.

Cross-Q. 21. The morning of what day?

A. On Saturday morning, I think, last.

Cross-Q. 22. Saturday morning of last week, do you mean? Then you took it from Mr. Harding's table the next day after you put it in there, did you not?

A. No; I didn't take it from there.

Cross-Q. 23. Where did you take it from?

A. I have not had it since then, until to-day, in my possession.

Cross-Q. 24. Since when?

A. Since last Saturday morning.

Cross-Q. 25. In whose possession has it been since last Saturday morning until to-day?

A. I do not know; it was here in the office, I suppose. I was not here since, until yesterday.

Cross-Q. 25½. Have you not had other devices on it since you took it, after it was offered in evidence, than those that now appear upon it?

A. The rake-frame or rake-stand was put on it when the flanges was there, and the crank-shaft was put in it at the same time.

Cross-Q. 26. This rake-frame and crank-shaft are not now on the model, are they?

A. The crank-shaft is on it; the rake-frame is not on it now.

596 Cross-Q. 27. When this model was put in evidence there was a driver's seat located on the model, was there not?

A. Yes, there was.

Cross-Q. 28. Where are the supports for the driver's seat which were then on the model?

A. Part of them are there now.

Cross-Q. 29. Where are the other parts of them?

A. I have them.

Cross-Q. 30. Why did you remove those portions of the supports of the seat, and put on wooden pieces, and remove the position of the seat?

A. I misunderstood Mr. Harding in his instruction as to the alteration.

Cross-Q. 31. My question is, for what purpose did you make this alteration in the support ot the seat?

A. My purpose was to have it just like the original machine, as I understood the instructions.

Cross-Q. 32. Did you not swear, when the model was first offered in evidence, and before the alterations were made, that it was like the original machine?

A. I did, so far as the use of the machine is concerned, in position

of the seat, and the operation of the machine; it not being essential to secure the seat supports to any particular part of the front frame to produce the same results while in operation or in balancing the machine.

Cross-Q. 33. Do you now say that this is the extent to which you testified the model was like the original machine before the model was altered?

A. That is my meaning in the matter.

Cross-Q. 34. And you now say this is all you meant in your former testimony, do you?

A. As far as supporting the seat and holding up the rear frame, that's what I mean.

Cross-Q. 35. This metal piece, to which the suspension chain is hooked, was not on the model when first offered in evidence, was it?

A. It constituted a part of the piece thus formed, the seat support and the frame support.

597 Cross-Q. 36. The wooden bar to which it is now screwed was not on it when offered in evidence?

A. The wooden bar was not there then.

Cross-Q. 37. Why did you make that change?

A. As I said before, I did that through a misunderstanding of Mr. Harding's instructions.

Cross-Q. 38. I observe now upon the model a bent piece of brass to which the prolongation of the finger-beam at the point, marked by the letter A; was this the same piece of brass on it when first offered in evidence?

A. The flat part of the rock-shaft is not the part that was there; that is, that piece.

Cross-Q. 39. When was this piece put there?

A. The piece was put there the time the flanges and crank-shaft was put there, as it constitutes a part of one flange that holds the rake-stand or frame.

Cross-Q. 40. Where are the piece or pieces cut or taken off, in order to put it there?

A. The piece that was cut off I could not find, as it got lost.

Cross-Q. 41. Is not this piece which is now on the model, projected above the rear pivot with a hole in it so as to form a support for the rake-stand?

A. Yes.

Cross-Q. 42. Was this the case of the piece which was taken off, and you cannot find; was the piece taken off so projected above the rear pivot, so as to form a support for the rake-stand?

A. No; it didn't project above the rear pivot.

Cross-Q. 43. I notice a piece soldered on the rock-shaft, under the front part of the seat, now on the model; was this piece on the model; when first offered in evidence?

A. I said once it was not.

Cross-Q. 44. Is not this last piece and the upward projecting piece before spoken of the support for the rake-stand?

A. They are.

Cross-Q. 45. Did you not, in your former testimony, and before the model was altered, say that the rake was supported upon the

598 continuation of the finger-beam at the point marked A, which mark is still upon the model?

A. My meaning, if I did say so in my testimony, is that the rake

and platform were so connected on the rock-shaft that the vibration or rocking of the platform and rakes are in harmony with each other.

(Answer objected to as not responsive to the question.)

Cross-Q. 46. Question repeated, and the witness is requested to answer whether or not he did testify as stated in the question.

A. I did, as I see it in my testimony, which I have in my hand, in answer to question 18; my meaning of the point A is the line of the rock-shaft.

ROBERT BROWN.

Sworn to and subscribed before me this 13th day Oct., A. D. 1877.

SAMUEL E. CAVIN,
Notary Public and Special Examiner.

Mr. Harding desires to state that the alteration of the model exhibit having been made with a misunderstanding by the witness of his instruction, he will have a new duplicate of original Exhibit Brown 3 made by the next meeting, and prove the identity of the same by Mr. Eliot and the present witness and other witnesses, and will then proceed with the examination of the witnesses under the reservation.

Mr. Harding further says that he proposes to prove the original Brown machine of 1861 by one or two witnesses, and the further testimony of Mr. Sliker before referred to, and the use of the Beans machine by Stackhouse and one or two others, and also to prove the Hoffheins machine was used without a seat. Mr. Harding also desires to give in evidence certain certified copies of the Patent Office records, and also identify the Brown duplicate of model 3, and subject to these reservations the defendants' testimony is closed; and Mr. Harding
599 further agrees that if this examination is adjourned until Monday, October 22d, 1877, at which time it is agreed that Mr. Harding will without delay proceed continuously to take said reserved testimony, and will close by Thursday, 25th inst., and will confine his testimony to that which is specifically reserved.

Mr. Harding is to proceed with Brown's testimony as reserved examination-in-chief at the same time and under the same conditions.

Mr. Harding proposes, with the consent of complainants' counsel, that the duplicate of the original Exhibit A will not contain the cog-teeth, which it is agreed have not been changed or altered by Mr. Brown. Complainants' counsel assents to this.

SAMUEL E. CAVIN,
Notary Public and Special Examiner.

Meeting held at the office of Geo. Harding, esq'r, 900 Chestnut street, Philadelphia, Wednesday, October 31st, A. D. 1877, at 10 a. m., pursuant to agreement.

Present, George H. Christy, esq'r, of counsel for complainant; George Harding, esq'r, counsel for defendant.

CHARLES STACKHOUSE, a witness on the part of the defendant, being produced, sworn, and examined, in answer to interrogatories propounded by GEORGE HARDING, esq'r, of counsel for defendants, deposes and says:

Int. 1. What is your age, name, residence, and occupation?

A. Charles Stackhouse; I am about seventy years of age; my occupation is that of a farmer; I reside in Montgomery Co., Harsham Township.

Int. 2. Please examine model now shown you and state if you know what that model represents.

(Question objected to as leading, provided it relates to any question of alleged prior use by the witness of such a machine as the model represents.)

Question withdrawn for the present.)

600 Int. 3. Did you use any reaping machine which had revolving rakes upon it, and in which the driver sat upon the machine; and, if so, when?

A. It was in 1862 I got the machine of Robert Beans, and we didn't use it in any other way than by the driver riding on the machine.

Int. 4. How long did you use that machine?

A. Until about 1870.

Int. 5. Did you give instructions to a model-maker for the making of a model of your machine?

A. I told him how it was made as near as I could remember.

Int. 6. What did you do with the old machine?

A. I sold it to Hulsush and Leizerlear, in Doylestown. Leizerlear took it away; that's all I know about it. This was about two years ago.

Int. 7. Please state whether you have examined the model now shown you, and point out wherein it corresponds or differs from the machine used by you in 1862, as stated in your testimony.

A. I can't see a particle of difference between this and the machine I used. That is a regular model of the machine, I got from Robert Beans.

Mr. Harding gives in evidence the model shown the witness, and marked Stackhouse model.

Int. 8. Can you fix the date of the machine being taken away by Leizerlear any more definitely?

A. I can fix it by reference to a paralytic stroke which I had four years ago this fall. It was then the machine was taken away.

Cross-examined:

Cross-int. 1. Who made this model, Exhibit Stackhouse Model?

A. It was Henry Noble and Mr. Sliker. They came to me, and I told them as near as I could about it, and I don't see anything wrong about it at all. I don't know who they got to make it.

601 Cross-int. 2. Did you ever see that machine after you sold it to Hulserser and Leizerlear?

(Objected to, as the witness has said that he knew nothing about it after Leizerlear took it away.)

A. That's all I do know about it. I don't know who it was sold to. Leizerlear took it away.

Cross-int. 3. Have you seen the machine since?

A. No.

Cross-int. 4. To whom did you sell it, and what did you get for it?

A. Well, that question is just this: Sliker took it part in trade for another machine. Then it laid there on my place near the barn for about three years—I cannot quiet the dates exactly—and rotted down.

Cross-int. 5. Then when did Leizerlear take it away?

A. It was traded to Sliker about 1870, and taken away about four years ago by Leizerlear.

Cross-int. 6. When Leizerlear took it away, or took the pieces away, did he say anything to you about what he was going to do with it?

A. No; I was sick at the time, and had nothing to say to him.

Cross-int. 7. How do you fix the date 1862 as being the time when you used the machine?

A. It was the second year after our war, and I guess we all know when that was. That commenced in 1861, if I remember right. I took a receipt of Roberts; if I can find it I will send it.

Mr. Harding requests the witness if he can find the receipt to send it in a sealed envelope to the notary. The witness continuing, says:

I did look for the receipt, but couldn't find it.

Counsel for complainants does not consent to any receipt being used in evidence in this case, unless properly produced and proved.

CHARLES STACKHOUSE.

Sworn to and subscribed before me October 31st, A. D. 1877.

SAMUEL E. CAVIN,
N. P. & Special Examiner.

602 Mr. Harding recalls Mr. Sliker to identify the model referred to in the last examination, and states that the parts of the old Beans machine referred to at the last examination are now at the model-maker's, and have been shown to Mr. Hoffheins there, and can be inspected by complainants' counsel if they desire at any time during the course of the examination.

RUFUS SLIKER recalled.

Int. 33. Have you had made under your directions the model "showing Beans' machine with the Lewis C. Reese rake on, to which you had referred as having been seen by you, in 1862, at work," as you were requested to do in question 21?

A. I have had under my directions a model made by Henry A. Noble, of 203 Dock street.

Int. 34. Can you produce or point out that model?

A. This is the model. (Witness points to Defendants' Exhibit Stackhouse Model.)

Int. 35. Please state whether you delivered to the model-maker or exhibited to him portions of the machine which you purchased of Stackhouse, as you have stated in your former testimony, about 1870.

A. I sen*d* it to him by express from Phillipsburg, New Jersey.

Int. 36. Please state whether model Exhibit Stackhouse Model corresponds or differs from the machine which you have stated you saw at work in 1862.

A. It does represent the machine which Mr. Stackhouse had at work in 1862; I saw it at work.

Int. 37. How does the rake upon said model correspond or differ from the Lewis C. Reese rake which you have said you saw upon a machine like the Whitenach exhibits in 1860?

A. The rake is the same but the location upon the machine is different. The rake in the other case was located upon the frame of the machine while this is on the finger-bar.

Int. 38. Prior to seeing this machine at work in 1862, like Exhibit Stackhouse Model, did you see any parts of it in course of construction?

603 A. I did see parts of it in course of construction shortly after the harvest of 1861. I saw Mr. Beans during the harvest of 1861, and he explained to me how he was building a machine of that kind, locating the rake on the finger-beam, and invited me, when near there, to call and see it.

Int. 39. How long prior to 1862 had Beans been building hinge-bar mowing machines?

A. I think it was about 1860 that I first saw his machine with hinge-bar; it might have been in 1861. I am not positive as to that.

Int. 40. Who took away the machine from Stackhouse?

A. I employed Hulserser and Leizerlear to go down, and get the machine. I went down there with their team and helped them load the machine. They hauled it up to Doylestown Station, and shipped it to me to Easton. I got it from there, and had it put up in the shed which belonged then to the Reese, Statts and Mellick Manufacturing Co.; I was a stockholder in that company at that time. This company was at Phillipsburg, New Jersey. I shipped it from there the other day to Mr. Noble, the model maker at 203 Dock street, by express.

Cross-examined:

Cross-int. 32. Please state what portions of that machine are now in existence.

A. The finger-beam, the rake-post, and the rake-frame, the hinged shoe, the support for the hinged shoe, the whole of the metal frame under the wooden frame, to which the two small carrying wheels are attached; the wheels themselves are not there, but the arms or uprights to which the wheels were attached are there. The half of the outside rail of the frame, split lengthwise, is still in existence. It was split when I got it from Mr. Stackhouse. The outside of the main drive-wheel is still attached to that split piece. A part of the front piece of the frame, between the two front posts, is also there. The front transverse shaft, with the bevel and spur wheel, are also there; and also the boxes of the same shaft. The vertical part of the connecting
604 rod which drives the sickle and also the horizontal part of it.

The machine was altogether as it is in this model when I traded for it. The machine was left standing at Stackhouse's after I traded for it, before the harvest of 1870, till September or October, 1873. I got it under the instructions of Mr. Harding for him at the time.

Cross-int. 33. When you took the machine away from where it stood, near Stackhouse's barn, in 1873, were there any other parts of the machine moved away by you besides those which you have enumerated above; and, if so, what were they, and what has become of them?

A. The driving-wheel I moved with it, the carrying-wheels, and to the best of my recollection, all the cast part of the rake-arms. In describing the parts now at the model-makers, I forgot to mention the cross-shaft and pulleys and boxes at the top of the posts on the front of the machine which drive the rake.

The superintendent at the works at Phillipsburg, I was told, sold the missing parts for old iron last fall.

Cross-int. 34. What was your business in 1862?

A. Selling reaping-machines and mowers. It has been ever since, and was for a good while before. In 1862 I was selling a machine manufactured at Phillipsburg called the Jersey Blue.

Cross-int. 35. From the time you first saw this Stackhouse machine, in 1862 down to 1870, what changes, if any, were made in its constructions?

A. Not any. When the machine was first put in the harvest, in 1862, the front right-hand pulley which drives the rake was like the left-hand pulley on the same shaft. The change was made during that harvest. I think between the time of cutting the wheat and the oats.

Cross-int. 36. Do you know who made that change, and why it was made?

A. Only from hearsay.

Cross-int. 37. If you heard at or about the time it was done, please state what you heard with reference to these two points.

605 A. The finger-bar working up and down would throw the chain off, and the long pulley was put on there. Mr. Beans made the change.

Cross-int. 38. Were any other changes made in the construction of the machine during 1862?

A. No, sir; I think not.

Cross-int. 39. How many times did you see that machine from 1863 to 1869, including both years?

A. I could not tell you just the number of times. I saw it quite a number of times, how many I don't remember.

Cross-int. 40. Did Mr. Beans built any more like it; and, if so, how many?

A. Not any, to my knowledge; I don't know that he built any more; I can give you what Mr. Beans said to me why he didn't build any more.

Cross-int. 41. How do you fix 1862 as the date when you first saw this Stackhouse machine?

A. In 1861 I sold machines to Charles Paxon, and after that harvest I was talking with Mr. Stackhouse in regard to selling him one of that kind for the next year. He talked favorably of buying one of them. The next time I recollect of seeing him was at a public sale in that neighborhood, either in February or March, 1862. He then told me that he had bargained with Mr. Beans for the hinge-bar machine he was building with the rake on; that was a curiosity, and I wanted to see it work, and watched it during that harvest to see how it would work. 1861 was the first year that I had control of Montgomery County, and that was the year that I sold Mr. Carson a machine, and that was the year that Mr. Beans sold a rigid-bar machine with the Reese rake on, as stated in my previous testimony.

Cross-int. 42. Do you consider that you have or have had any reason for wishing to upset the Hoffheins patents?

A. I have not any reason for wishing to upset them at the present time. I can't say that I have had any reason. I was at one time interested in the manufacture of machines, and might at that time have been interested to upset them, if I had thought that they were going to cost me anything at that time, but now I have no interest whatever in it, and have not had for some time.

606 Cross-int. 43. During what year was it that you were interested in building reaping-machines, as stated in your last answer, and as a member of or stockholder in what company?

A. In November, 1865, I was a member of the firm of Reese, Mellick & Company, at Phillipsburg, New Jersey. From that time till the spring of 1867, when it was turned into a stock company, I was a stockholder in the company, the Reese, Statt and Mellick Manufacturing Company, until December, 1873.

Cross-int. 44. And these companies were, during those years, making and selling reaping-machines which you understood Mr. Hoffheins to claim to be an infringement of his patents. Is that correct?

A. Not during all that time; neither do I know to my own knowledge that Mr. Hoffheins ever claimed that the machines we were building were infringements on his patents; since then I have talked with Mr.

Hoffheins, and he claimed that the machines built then were infringement of his patents.

Cross-int. 45. How long since you first understood that Mr. Hoffheins so claimed?

A. I can't recollect how long ago it was. To the best of my recollection I think it is about in the neighborhood of three years since the first time I talked with him; I recollect having two conversations with him.

Cross-int. 46. At or about the time you bought the old Stackhouse machine, did you understand that it was intended to be used against the Hoffheins patents, if suit should ever be brought on them?

A. I did not. At the time Mr. Harding instructed me to buy it, it was intended to be used in the suit of James S. Marsh, of Lewisburg, against his clients, which was then going on.

Redirect:

Int. 41. Is Robert Beans dead?

A. Yes, sir.

Int. 42. Did Mr. Beans state why he didn't build any more machines like this (Stackhouse model)?

607 A. He did; he said the rake was too expensive; it cost too much money; that he couldn't compete with others. (The witness points to the rake-head and says:) This part was too expensive.

Counsel for complainants objects to the statement of Beans as evidence, unless it be as connected with the building of the first machine as to be a part of the res gestæ.

RUFUS SLIKER.

Sworn to and subscribed before me, Oct. 31st A. D. 1877.

SAMUEL E. CAVIN,
N. P. and Special Examiner.

SAMUEL MILLER, a witness on part of defendants, being produced, sworn, and examined, in answer to interrogatories propounded by Mr. Harding, of counsel for defendants, deposes and says:

Int. What is your name, age, residence, and occupation?

A. Samuel Miller; I am sixty-eight years of age; I reside in Middletown Valley, Frederick County, Md., seven miles from Frederick. I am a farmer.

Int. 2. Did you purchase of Calvin Page, of Frederick, a reaping and mowing machine; and, if so, when?

A. I did in 1861.

Int. 3. How long did you use that machine, and what did you do with it?

A. I used it in the harvest of 1861, and used it every year until 1877, and cut the crop of 1877 with it; I then exchanged it with Mr. Page for another one.

Int. 4. Please examine the old machine or parts of machine consisting of a rake-stand main frame, and state whether or not you recognize that rake-stand and main frame as belonging to your machine.

A. Yes, sir; I do.

608 Int. 5. Please examine the finger-bar, and state whether you recognize that as the finger-bar belonging to your machine.

A. Yes, sir.

Int. 6. Please examine the model now shown you, and marked "Defendants' Exhibit Miller Machine," and state whether it corresponds

with or differs from the machine as you used it in the harvest of 1861, and, if it differs, point out wherein it differs.

(Examination by model objected to by complainants' counsel, as well as the model itself, unless the machine or parts of the machine referred to in the last previous questions are offered in evidence, they being here, and the witness examined in reference thereto.

Mr. Harding states that he will have no objection to the machine or parts of machine being given in evidence except on account of their bulk and the difficulty of transporting them, and their liability to become lost; that he will identify them by marks, and endeavor to produce them at the hearing of the case; or the complainant, if he likes, may assume the responsibility of transporting them if he thinks it material to do so.

They are produced to enable him to cross-examine the witness to show any discrepency he may desire.

Complainants' counsel suggests that if the machine has been preserved for sixteen years, and been transported from Frederick, Maryland, to Philadelphia, Pennsylvania, it may be preserved until the hearing in the case, and transported to Cleveland, Ohio, without difficulty, and the objection alone taken is insisted on, any secondary evidence of a model being inadmissible, whereas here the alleged original machine can be produced.

Mr. Harding requests the examiner to identify the several
609 parts of the original machine as Exhibit Miller main frame, Exhibit Miller rake-stand, and Exhibit Miller finger-beam, and states he will endeavor to produce them at the hearing.)

A. It corresponds in every respect, as far as I can ascertain.

Q. 7. To what extent did you use that machine in reaping, and to what extent in mowing, as shown in that model, in the harvest of 1861?

A. I can't give you the number of acres exactly, but about sixty acres of wheat and rye. We mowed with it—I can't give you the number of acres exactly; it might have been fifteen tons; that is my best recollection.

Int. 8. When you mowed with the machine in that year was the rake-stand removed?

A. Yes, sir.

Int. 9. I observe that the finger-bar of your old machine (Exhibit Miller finger-bar) is straight, while the finger-bar on the model Exhibit Miller machine is curved in the inner end; can you explain this difference?

A. The reason we had the bar straightened was because the bar was too long for mowing.

Int. 10. When was the bar straightened?

A. In 1862.

Int. 11. What was done to the bar in 1862?

A. It was straightened; that's all I know.

Int. 12. Please examine Exhibit Model Miller straight finger-bar, and state whether or not that corresponds or differs from the finger-bar as you had it straightened in 1862.

A. It represents the finger-bar in all respects as they altered it for me in 1862.

Int. 13. What effect in the operation of the machine in reaping had the straightening of the finger-bar?

A. We could cut higher with it in tall grain.

Int. 14. What kind of ground have you?

A. Some very rough—hilly.

610 Int. 15. At the time that this finger-bar was straightened for you, did Calvin Page furnish you any finger-bar for mowing beside this one?

A. Yes, sir.

Int. 16. Was that longer or shorter than the other, or the same size?

A. Shorter.

Int. 17. State whether that machine had or had not a hinge.

A. It had a hinge.

Int. 18. Please examine the model now shown you, marked Exhibit Model Miller Mowing-bar, and state whether it corresponds or differs from the mowing finger-bar as furnished to you at that time.

(Objected to by complainants' counsel, unless the original is produced or its absence properly accounted for.

Question suspended.)

Int. 19. Did you deliver the short mowing-bar with the hinge on it to Mr. Page, along with the other parts of the machine?

A. Yes, sir; after the harvest of 1877. Yes, sir; we delivered all the parts at once.

(Mr. Harding here states that he proposed to prove by other witnesses that after the delivery of this finger-bar to Calvin Page, along with the other parts of the machine, and after the purchase by him through Mr. Brown of the machine, the said finger-bar was, by direction of Mr. Hoffheins, complainant, removed and expressed to his residence at York, and now calls Mr. Hoffheins, here present, to produce the same, and that this counsel withdraw the objection.

Mr. Christy, counsel for complainant, concedes that if the proof suggested is made the objection will have no force, and also states that it is impossible for the complainant to produce the finger-bar in question at that present time and place.)

611 Int. 20. Question No. 18 repeated.

A. It corresponds with it in that one finger-bar had a hinge there. That model represents the mowing finger-bar as furnished, except that the guards are not on it; I mean the fingers, the spears we call them.

Int. 21. Can you fix the date of the purchase of the machines as stated by you?

A. I purchased the machine some time in the winter, 1861, prior to April, and paid for it on the third day of April, 1861.

Int. 22. Can you produce the bill and receipt for the machine?

A. I can.

Int. 23. Please produce it.

Witness produces bill and receipt for this receipt, as follows:

Messrs. Samuel and Adam Miller bought of Calvin Page, April 3, 1861, one improved iron frame, two-wheeled Dorsey Self-raking Reaper and Mower at $140.00.

Rec'd payment in full for above reaper this 3d day of April, 1861, with the full and positive understanding, and if the above machine does not render full and ample satisfaction to Messrs. Miller when they give it a fair trial, I will refund the money paid and relieve them of the machine.

CALVIN PAGE,
By A. L. EADER.

Int. 24. How did said machine work in reaping and in mowing during the harvest of 1861?

A. It did its work very well; that bill shows that we had an agreement that if it did not work well we could return it and get our money back.

Int. 25. Prior to your ordering this machine, had you seen at Mr. Page's or at Frederick a machine similar to it?

612 A. Yes, sir; I saw it at Page's in the year 1860; I can't fix the date previously, but it was shortly after the agricultural fair.

Int. 26. Where was the agricultural fair held that year?

A. At Frederick.

Mr. Harding gives in evidence the several exhibit models, and states that he will endeavor to have the large exhibits machines which have been identified present at the hearing.

Objection already noted continued as to the models, unless the machine exhibits referred to are produced at the hearing.

Cross-examined:

Cross-int. 1. After you got the finger-bar straightened, did you continue to use it in mowing or in changing the machine from reaping to mowing, did you put in the hinge-bar?

A. We used the hinge-bar for mowing, not the straight bar.

Cross-int. 2. Why did you prefer the hinge-bar for mowing?

A. Because of the length of it, and having on the joint would give more to the unevenness of the ground.

Cross-int. 3. Were any other changes made in the construction of the machine besides straightening the finger-bar and adding the hinge-bar during the time you were using it?

A. At the time he straightened the finger-bar it raised the platform, and then the rake would strike the platform too hard, and then he just had to alter the arm so that the rake would not strike the platform too hard. These were all the alterations which were made.

Cross-Q. 4. Then the machine, Exhibit Miller Main Frame, Exhibit Miller Rake-stand, and Exhibit Miller Finger-beam are in the same condition and of the same construction as when you purchased the machine in 1861, ordinary wear and tear excepted, aside from the changes which you have spoken of; is that right?

613 A. That is right.

Cross-int. 5. When you used the machine for reaping, the first year, did the driver ride on the machine?

A. No, sir; he never did, for reaping.

Cross-int. 6. In the old machine, did you not have to take the seat off when you put the rake on?

A. We always took it off when we want to harvest, to reap; I never tried it to leave it on; I don't know whether it could be left on or not.

Cross-int. 7. Is it not a fact, that in the old machine the seat was further back than it is represented to be in the model?

Cross-int. 7. That question I can't answer without measuring it in proportion.

Cross-int. 8. Was the seat with the machine when you sold it to Page?

A. Yes, sir.

Mr. Harding states that the seat on the original machine had to be removed when the loose rake-stand was placed on it, and that the model should be moved back about three inches to correspond with the large machine; that the seat to the large machine was detained and only reached the city this morning, and that the model was made in he absence of the same.

Cross-int. 9. I notice on the Exhibit Miller Main Frame a swinging post or brace attached to one of the upper side bars of the frame, and extending down toward the lower hinged frames; do you find that post or brace in the model marked Defendants' Exhibit, Miller Machine?

A. It is not there; that was only put there that when you drawed the lever on the left side of the machine in mowing, it wouldn't throw the hind frame up too far and raise the finger-bar of the mower higher, or so that it would raise it higher.

Cross-int. 10. Did you not, when first using that machine, adjust the finger-bar to the proper height by means of the chian and hook,
614 and then drop the lower end of the brace against the lower hinged frame so as to hold the finger-bar steadily in position when reaping?

A. When I reaped I took that brace off, it was only to be used in mowing. Its use was to enable us to raise the finger-bar higher, to go over stumps or stones in mowing.

Cross-int. 11. Was the machine complete when you purchased it in the winter of 1861, or were they building it then?

A. It was not finished then, I bespoke it then—I won't be certain whether I bespoke it in 1861 or 1860, but that was the winter I bespoke it; me and Mr. Brown talked about it after it was exhibited at the agricultural fair, and bespoke it in the winter afterwards. He explained the operation of it to me after the fair.

Cross-int. 12. Was the machine finished at the time you paid for it, April 3, 1861, or was it *fur*nished and delivered afterwards?

A. It was finished when I paid for it.

Cross-int. 13. You say that the reason you had the bar straightened was that it was too long for mowing. Did straightening make it any shorter?

A. We got it straightened so that it would cut higher, and we had a mowing-bar made.

Cross-int. 14. Then it cut too low in reaping, did it, before it was straightened?

A. Of course, when we straightened it it cut a little bit higher. It was just as the grain was. After we straightened it we could cut just as low as before by letting it down, but when we raised it that crook and take out, made it just that much higher.

Cross-int. 15. Question repeated.

A. It cut low—too low; we couldn't raise it high enough when that crook was in the bar.

Cross-int. 16. Who made the model, Defendants' Exhibit Miller Machine, and the model of the finger-bar as to which you have testified?

A. I can't answer that question; I don't know.

Cross-int. 17. When did you first see them?

A. To-day.

Cross-int. 18. Did you have anything to do with getting them made?

615 *Q.* No, sir.

Cross-int. 19. Was this straightening of the finger-bar and the making of a new finger-bar for mowing done at the beginning or end of the harvest of 1862?

A. It must have been done some time in May or June of 1862; I can't say exactly; it was done before hay-making; we mowed our grass with it.

Cross-int. 20. You say that in 1860, you saw at Page's—in the yard—

a machine similar to the one you bought. Do you mean it had the same construction of parts, and the same operation?

A. As far as my memory serves me, it was constructed the same.

Cross-int. 21. Did it have a double frame, or one frame hinged to another, as in the model Exhibit Miller Machine?

A. It had the same as the model.

Cross-int. 22. Do you remember whether these frames of the machine you saw in Page's yard in 1860 were of iron frames or wooden frames, for one iron and one wooden?

A. I don't know whether they were iron or wooden.

And in answer to interrogatories proposed in redirect examination by Mr. HARDING, he saith:

Redirect int. 24. How high did you reap your grain in the harvest of 1861, and was the finger-bar high enough to enable you to reap your grain in that harvest?

A. We harvested our grain that year with it, but as a general thing it cut it too low for us.

Redirect int. 25. How much higher did you cut it after you altered it?

A. After we altered it we cut it a foot higher, it gave a stubble a foot long—before it was altered it left the stubble about eight inches long.

Redirect int. 26. Your ground is pretty rough, is it?

A. My ground is very rough as a general thing.

SAMUEL MILLER.

Sworn to and subscribed before me October 31st, A. D. 1877.

SAMUEL E. CAVIN,
N. P., & Special Examiner.

616 ROBERT BROWN recalled:

Please examine Exhibit Duplicate Brown Model III, and state whether or not it corresponds with Exhibit Brown Model III, as it was given in evidence when you were first examined in this case, and before you altered it to show the manner in which the rake-stand is attached.

A. It corresponds with the Exhibit Brown Model III before it was changed or altered, and before it was first offered in evidence.

Int. 2. Have you seen or examined, since giving your testimony with reference to the machine of 1861, the hinged-joint machine which was sold to Miller in 1861, as testified to by him?

A. I have.

Int. 3. Are the parts of the old machine, referred to in the testimony of Samuel Miller, now shown you, the parts of the old machine which you referred to in your former testimony?

A. They are.

Int. 4. Please examine model Exhibit Miller Machine, and, supposing the seat to be removed therefrom, state whether it corresponds or differs from the machines as seen by you in operation in the harvest of 1861.

A. Supposing the seat to be removed, it does correspond.

Int. 5. I observe in the full-sized machine of Miller's a small swinging post on the outer longitudinal beam of the frame, and I do not observe that that is shown on the model; can you give me a small swinging post, adapted to the model, and point out by letter on the model where it should be inserted to represent the post on the large machine?

A. Witness produces a small swinging post, marked Miller B, and

states that it should be inserted at the hole which is marked A on the frame.

Int. 6. Was said piece intended to be used with the machine in the reaping?

A. It was not.

617 Int. 7. What was its purpose when the machine was used for mowing?

A. To check upward movement of the rear frame when you worked the cutter-bar; the lever that raised the cutter-bar; and the effect was that the frame raised first as far as the stop, and the cutter-bar raised sufficient high enough to pass over obstructions.

Int. 8. What was the position of the seat on the machine when placed there for mowing when the rake was removed?

A. About three inches further back than it is now on the model. If the bolt-holes were put in at the point C, it would bring the seat at about the proper position, or if the standards which support the seat were increased in length about three inches, it would accomplish the same thing.

Int. 9. Did you see the machine in operation on Miller's farm in 1861?

A. I did.

Int. 10. About what height of the stubble was it cutting while reaping?

A. I can't give the exact lengths, but I suppose from six to eight inches.

Int. 11. What is the usual height they cut in your neighborhood?

A. The average height is from six to eight inches when the grain stands up; when it's down, you want to cut lower than that.

Int. 12. State how the machine worked in mowing and in reaping.

A. It worked very well in reaping. I did use—work the Miller machine in grass.

Int. 13. Do you remember the sale of a mowing machine to Wm. T. Preston in the year 1861?

A. Yes, sir; I saw that machine work.

Int. 14. State whether or not that machine had a hinged frame like Exhibit Model Miller Machine?

A. It had.

Int. 15. Please state what kind of a mowing bar was attached to it.

A. The mowing bar had a hinge at the shoe.

618 Int. 16. Please state whether or not it was like Exhibit Model Miller Mowing-bar.

A. Model Miller Mowing-bar represents the bar that was to that machine.

Int. 17. Do you remember building other reaper' having revolving rakes and a hinged frame like Exhibit Model Miller Machine for the harvest of 1861?

A. I do.

Int. 18. What kind of a mowing finger-bar had those machines?

A. A hinged bar at the shoe.

Int. 19. How was the reaping-bar of those machines?

A. The reaping-bar had no hinge at the shoe; it was all in one piece.

Int. 20. Do you remember giving the order to Mr. Eaden to send up the old Miller machine?

A. Yes, sir.

Int. 21. What did you direct him to send up?

A. My understanding was that I bought the old machine, as much of

it as *it* could be found. I saw him at the fair and told him that if I should want it, I would telegraph for it and he would send it; he asked me if I wanted the platform. I told him that if the platform was unhandy for shipments and could not be had, we could possibly do without it.

Int. 22. Did you afterwards telegraph to send on the machine?

A. I did.

And in answer to cross-interrogatories propounded by Mr. CHRISTY, of counsel for complainant, he saith:

Cross-int. 23. Who made the model Exhibit Model Miller Machine?

A. Henry Noble, I believe, is the name of the maker.

Cross-int. 24. Was it made under your directions?

A. It was made partly from my directions and partly from the machine.

Cross-int. 25. You supervised the work, did you not?

A. Part of the time I was away; I did supervise it.

619 Cross-int. 26. How much of your time for the last month or two have you given to this case in matters connected therewith?

A. About a month.

Cross-int. 27. About how much time previous to that?

A. I had nothing to do with it previous to the time I came here. I know nothing about it.

Cross-int. 28. Are you giving your time to this case, or do you expect to be paid for it?

A. I have no bargain or contract in the matter at all; I don't know that I get anything.

Cross-int. 29. Who furnished the money to pay for the old Miller machine, which you bought of Page?

A. I wasn't here when the machine arrived here, as I suppose Mr. Harding paid for the machine. I ordered it sent here C. O. D.

Cross-int. 30. Please give the price agreed on for said machine.

A. I bought the machine for ten dollars.

Cross-int. 31. What part of the old machine, if any, were sent here which *you* has not been produced during this hearing?

A. I don't know of any parts that have not been produced except the rake-arms and rakes.

Cross-int. 32. Do you know whether or not the platform is still in existence?

A. I do not; I think it has been destroyed.

And in answer to interrogatories propounded in redirect examinations he saith:

Redirect int. 33. Please examine the rake-arms and rakes now shown you, and state, if you know, when they arrived here, and whether they are the rake-arms and rakes belonging to the old Miller machine and when they arrived.

A. Those are the arms and rakes; I believe they arrived here yesterday; there is one rake-arm and one rake; one reel-arm and one beater which are the said Miller rake-arm and Miller reel-arm.

Redirect int. 34. When you gave the instructions to the model

620 maker to make the model of Miller machine, did you show him the old machine, and what instructions did you give him?

A. I showed him as much of the old machine as was here, and I told him to make it as near like that as he could.

Redirect int. 35. When did the seat belonging to the old Miller machine arrive?

A. I believe that come with the rake-arms.

Redirect int. 36. Did you notice that the hinged post or stop Miller B, had been omitted from the model prior to your attention being called to it yesterday?

A. I did not until my attention was called to it.

Redirect int. 37. Did you direct, or take any step, or do anything to keep back any part of the old Miller machine that you are aware of?

A. No, sir.

Redirect int. 38. Did you give any directions or instruction with a view to having an incorrect model of the Miller machine.

A. I did not.

Redirect int. 39. Were you not detained here a large part of the time, owing to my sickness and inability to examine you as a witness?

A. I was, sir.

Redirect int. 40. Were you not sick a part of the time yourself?

A. I was sick, and am not well now.

Redirect int. 41. Have you any interest, direct or indirect, in the result of this suit?

A. I have not any at all.

And in answer to interrogatories, propounded in redirect examination, he saith:

Recross-int. 42. Did you not say to Mr. Eader, the last witness examined, that it would be of great advantage to yourself when you negotiated with him for the Miller machine, if you could get the machines, or win the suit against Hoffheins, or used words to that effect?

A. I only said to him that my inventions would not be broken down by Hoffheins. I had no view to any financial basis at all; I said nothing about it.

621 Recross-int. 43. Then you did not use to him any such language, or language of like meaning, as that contained in my last question?

A. The only language that I used to him was the language that I have stated.

Recross-int 44. Can you not answer my last question, yes or no?

A. I did not say it to him.

Recross-int. 45. Do you mean that you said in substance what I ask you about in recross-interrogatories 42, or that you did not say it?

A. I mean that I did not say it to him in substance.

Recross-int. 46. Well, then, is that statement you made to Eader true or not?

A. That statement is true as far as I can recollect; I mean that as far as patents is concerned my statement to Eader is true.

ROBERT BROWN.

Sworn to and subscribed before me, November 1st, A. D. 1877.

SAMUEL E. CAVIN,
N. P. & Special Examiner.

Meeting held at office of George Harding, 900 Chestnut street, Nov. 1st, 1877, 9.30 a. m.

Present, G. Christy, esq., for complainant; G. Harding, esq., for defendant.

A. L. EADER, a witness on part of defendant, being produced, sworn, and examined, in answer to interrogatories propounded by Mr. Harding, deposes and says:

Int. 1. What is your name, age, residence, and occupation?

A. A. L. Eader; I am fifty-seven years of age; clerk and general manager; residence, Frederick City, Md.

Int. 2. Have you been employed by Mr. Calvin Page, of Frederick, Md., and if so, how long?

A. Yes, sir; since the 6th day of Nov., 1857.

Int. 3. Do you know Robert Brown?

622 A. I know Robert Brown.

Int. 4. Have you any knowledge of his getting up a reaping-machine with a revolving-rake at Calvin Page's shop?

A. Yes, sir.

Int. 5. Do you remember of the sale of the machine, gotten up by him, to Samuel Miller, of Middletown?

A. Yes, sir.

Int. 6. Please examine the frame and rake stand of the old machine now shown you, and state whether it is the old machine, or part of the old machine, so sold.

(Witness is shown the parts of the old machine testified to by witness, Samuel Miller.)

A. That is the machine sold to Mr. Miller.

Int. 7. Do you remember of the return of that machine to Mr. Page's by Mr. Miller in part trade for another machine?

A. It was exchanged for another machine after the harvest of 1877, in August.

Int. 8. Was there returned with that machine a finger-bar with a hinge at the shoe, as well as one which had not a hinge at the shoe?

A. There was.

Int. 9. To whom was the finger-bar with a hinge or the shoe sent from your place?

A. It was sent to Mr. Hoffheins. Mr. Hoffheins sent a telegraph to send it where the machine went. We sent it to York, Pa., to Mr. Hoffheins under misapprehension. It was addressed to Mr. Hoffheins, York, Pa.; it was sent on last Friday a week, as near as I can remember.

Int. 10. Did Robert Brown make, or did Calvin Page sell, any other machines having a hinge frame, such as shown in the large Exhibit Miller's Machine, or in the model Exhibit Miller's Machines in the year 1861?

A. Robert Brown made the Miller machine and five other machines in that year, and they were all sold in that year.

Int. 11. Had those machines this hinged frame, as shown in the large Miller machine in the model?

A. Yes, sir.

623 Int. 12. Will you please refer to your books and give me the date of the delivering of the machine to Miller, and the date of the sale and delivery of the other machine?

A. The first machine was sold to Samuel and Adam Miller, April 3rd, and delivered to him April 20th, 1861. The next machine was Elias Spaulding's, of Greenfield Mills, Frederick County, Md., delivered June 1st, 1861. The next machine was delivered to Wm. S. Preston, of Frederick, Md., June 15th, 1861. This machine was a mower alone, with a jointed bar and driver's seat, and the next year was converted into a reaper and mower by the addition of a platform, knives, finger-bar and revolving rakes. The next was to Israel Houck, of Frederick City, delivered on the 29th of June, 1861; that was a reaper and mower. The next was to John Trundle, of Buckeyetown, Frederick County, Md., now deceased, delivered June 27th, 1861. Next was

Henry A. Keafauver, of Middletown, Md., now deceased; his was simple a reaper, and had no mowing attachment; delivered July 13th, 1861.

Int. 13. What kind of a finger-beam was attached to the hinged frame of the machine which was sold to Wm. T. Preston?

A. It was three inches long by a half inch thick of wrought-iron.

Int. 14. You say in your answer it was a jointed bar, what do you mean by a jointed bar?

A. I mean a hinged joint similar to the Buckeye or any similar mowing-bar.

Int. 15. Please examine Exhibit Model Miller Mowing-bar and state whether or not that represents what you mean by a jointed bar in that answer.

A. It is like it in a degree, but it is not precisely like it; that is what I would call a jointed bar.

Int. 16. State what kind of a mowing-bar the Houck machine had.

A. It had a mowing-bar similar to the one made for Preston. It had a hinged joint in the Exhibit Miller Mowing-bar.

Int. 17. What was Trundle's machine, and how about the bar?

624 A. It was a reaper and mower, the bar was the same as Mr. Houck's.

Int. 18. What kind of a reaper bar had these machines of Houck & Trundle?

A. Precisely like the one now on Mr. Miller's; there was no hinge at the shoe as in the mowing bar.

Int. 19. How many machines having like those of Houck & Trundle's a vibrating hinge-frame, and a finger-bar for reaping, and hinged finger-bar for mowing, having a revolving rake attachment and chain suspended, as shown in Exhibit Model Miller Machine, did you sell in 1861?

A. Twenty, I think, such machines and three mowers.

Int. 20. Were the machines which you sold in 1861, paid for at full price, or were any returned, and any deduction made for those machines?

A. They were all sold and paid for; the only deduction made was for cash payment at time of sales. The price was about one hundred and forty dollars.

Int. 21. How many of those machines like Houck & Trundle's were sold in 1863 by Calvin Page?

A. Forty-one combined reapers and mowers and four mowers.

Int. 22. How long did you continue to build and sell those machines?

A. Until 1868.

And in answer to cross-interrogatories proposed by Mr. CHRISTY, of counsel of complainants, he saith:

Cross-int. 23. What was the difference, if any, between the Miller machine and the Houck & Trundle's machines?

A. They were all the same build.

Cross-int. 24. What parts of the old Miller machine were first sent to Philadelphia, and by whose orders, or at whose request?

A. The truck, the rake stand, and frame, and the finger-bar by Robert Brown's orders, and at his request.

625 Cross-int. 25. Was not the reaper finger-bar sent separately, and after the other parts you have named had been sent?

A. Yes, sir.

Cross-int. 26. What other parts were sent afterwards, if any?

A. I really do not know what was sent, but there were some parts, or portions left, and packed in a box, and sent afterwards. I marked the box, but don't know what was in it except that I know there was a mowing-bar in the box.

Cross-int. 27. Was this box which you last referred to sent to Philadelphia?

A. Yes, sir.

Cross-int. 28. Do you remember when the seat was sent whether in the first shipment, the second or some other?

A. It was sent with the box that contained the mowing-bar.

Cross-int. 29. To whom was the box directed?

A. To Mr. Geo. Harding.

Cross-int. 30. Please state when this last box was sent?

A. On Monday of this week, Oct. 29, 1877. The mowing-bar to which I refer was not the mowing-bar of the Miller machine.

Cross-int. 31. How long before this had the other parts of the machine been sent; the truck frame, and rake frame, and afterwards the reaper finger-bar?

A. The first shipment was made, I think, on the 17th, or 18th, thereafter, in 1877.

Cross-int. 32. Do you know any reason why all parts of the old Miller machine were not sent at first?

A. I understand Mr. Brown to say at the fair ground, when he saw me with reference to the matter, that all that he wanted was the main truck and reaper-bar. I was very busy at the time; I was treasurer of the fair.

Cross-int. 33. Were any alterations made in the Miller machine, after it was delivered to him?

A. So far as I remember they were changed; a substitution of another shoe in the mowing-bar.

Cross-int. 34. The mowing-bar then was furnished with the machine?

626 A. To the best of my recollection, yes.

Cross-int. 35. And the reaper finger-bar is now in the same condition as in April, 1861, ordinary wear and tear excepted?

A. It has the same guard, and is the same bar; I am not positive as regards the date.

Cross-int. 36. Do you remember what was the trouble with the shoe in either the reaper or mower finger-beams?

A. I do not know in regard to that matter; it was not my business to know that time.

Cross-int. 37. Prior to 1861 was there made at Page's shop, or was there standing in his yard any machine having a hinge-frame, such as is shown in the large Exhibit Miller Machine, or in the Model Exhibit Miller Machine?

A. There was a machine; Mr. Brown was experimenting with it; I cannot describe it.

Cross-int. 38. That was the only one, was it?

A. Yes, sir.

Cross-int. 39. Do you remember whether it has a double-hinged frame?

A. I can't answer that, sir.

Re-examination:

The old machine at first sent was only the truck and rake frame;

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Cross-int. 38. That was the only one, was it?

A. Yes, sir.

Cross-int. 39. Do you remember whether it has a double-hinged frame?

A. I can't answer that, sir.

Re-examination:

The old machine at first sent was only the truck and rake frame;

there was received a dispatch from Mr. Brown—"machine arrived," and no finger-bar, where is it.

Redirect int. 40. Are you distinct in your recollection that there was a hinge on the inner end of the mowing bar of those Houck, Trundle, and Preston machines?

A. Yes, sir; the same as Mr. Miller's.

Redirect int. 41. When was the hinge put on the mowing bar of the Miller machines?

A. I am at fault as to that. There was a mowing-bar added to the Miller machine. I was under the impression that it was put on at the time he got his machine, but I am not positive with regard to that.

A. L. EADER.

Sworn to and subscribed before me, Nov. 1st, A. D. 1877.

SAMUEL E. CAVIN,
N. P. and Special Examiner.

627 BALTIMORE, *November 12th*, 1878.

Met pursuant to agreement.

Present, John R. Bennett, esq., counsel for defendants; J. H. B. Latrobe, esq., counsel for complainants.

GEORGE BAUM, a witness produced on behalf of the defendants, being duly sworn, testified as follows:

By Mr. BENNETT:

Int. 1. What is your name, age, residence, and occupation?

A. My name is George Baum; I am forty-seven years old; I am a farmer; I reside in Washington Township, York County.

Int. 2. Were you called as a witness by Mr. Hoffheins some time during the month of June, 1878?

A. Yes, sir.

Int. 3. Were you examined by Mr. Christy, counsel for Mr. Hoffheins?

A. Yes, sir.

Int. 4. Was your deposition reduced to writing?

A. Yes, sir; I think so.

Int. 5. Who was it took your deposition?

A. Squire Heckert.

Int. 6. After Squire Heckert had taken your deposition did you sign the same?

A. I am not positive about that, but I rather think I did; I am not positive, though.

Int. 7. Do you remember buying a machine from Mr. J. H. Shireman, or his agent, some time in 1864?

A. Yes, sir; I can't tell you the time, but I recollect that I bought a machine from him.

Int. 8. What kind of a machine was it?

A. A self-raking machine.

Int. 9. At the time you purchased it did you understand it to be any particular machine?

628 A. They told me it was the sample machine. Mr. Shireman told me so, and his agent told me so.

(Objected to as being hearsay testimony.)

Int. 10. Did you use that machine both as a reaper and a mower?

A. Yes, sir.

Int. 11. When using that machine as a reaper did you ever sit upon the machine?

A. I did.

Int. 12. With what result?

A. Well, it was not safe for a man to ride on, and particularly on uneven ground.

Int. 13. On the occasion on which you attempted to ride on the machine did the rakes strike you?

A. They did a couple of times; yes, sir.

Int. 14. What was the character of the land on which you tried the machine?

A. On pretty even ground.

Int. 15. Do you think it possible for a man to have ridden upon that machine during the operation of reaping on deep furrowed ground?

A. No, sir.

Int. 16. It would be utterly impossible?

A. Yes, sir.

Int. 17. Can you state what kind of seat was used on that machine?

A. No, sir; I can't.

Int. 18. Or where it was located?

A. No, sir; I can't tell you about that.

Int. 19. You have stated all you know about it, and all that you can now remember?

A. Yes, sir.

Cross-examination by Mr. LATROBE:

Cross-int. 1. You sat on the machine during the revolution of the rakes, did you?

A. Yes, sir.

629 Cross-int. 2. Was the machine in operation then?

A. Yes, sir.

Cross-int. 3. Upon the fields?

A. Yes, sir.

Cross-int. 4. You say the rakes struck you twice?

A. They struck me a couple of times.

Cross-int. 5. How long were you upon that machine?

A. Oh, now, I can't positively tell you; I tried it frequently, though—may be two, or three, or four times.

Cross int. 6. Having ridden on this machine three or four different times during the operation of reaping, on two occasions you say you were hit by the rakes?

A. On several occasions; I could not say positively twice or half a dozen times; but I recollect it struck me a couple of times, and also took the whipout of my hands and knocked it away.

Cross-int. 7. It was twice you are sure of?

A. Yes, sir.

Cross-int. 8. It may have struck you oftener?

A. Yes, sir.

Cross-int. 9. But you are only sure of twice?

A. Well, I am not sure of that; but I knew it struck me; it may have struck me half a dozen times.

Cross-int. 10. What was the distance between the rake and the top of your head when it did not strike you?

A. That I could not tell you any more.

Cross-int. 11. How many times did the rakes revolve during the time that you rode on the machine?

A. That I could not tell you.

Cross-int. 12. How much wheat or grain did you cut while you were riding on the machine?

A. Well, that is a question I can't answer. I think, if I am allowed to tell you, that sometimes I made a round or two, and then I got on my horses again. Sometimes I made a round through the field, and sometimes more, and then I got on the horses again.

630 Cross-int. 13. As near as you can tell, as a truthful man, desiring to tell me what you recollect, how many acres of grain do you suppose you cut while you were riding on the machine?

A. That I can't tell you.

Cross-int. 14. Do you think it was ten acres?

A. No, sir; I think not.

Cross-int. 15. Do you think it was five acres?

A. Well, that is a thing I can't answer.

Cross-int. 16. Do you think it was an acre?

A. Yes, sir; I am sure about that.

Cross-int. 17. Do you recollect the field that was cut?

A. I do one; yes, sir.

Cross-int. 18. Do you recall it now in your mind?

A. Yes, sir.

Cross-int. 19. Do you know the number of acres in that field?

A. Sixteen and a half.

Cross-int. 20. Was that field of grain cut with this machine?

A. Yes, sir.

Cross-int. 21. During the cutting by that machine did you ride upon the seat?

A. Yes, sir; sometimes I did.

Cross-int. 22. On the machine?

A. Yes, sir.

Cross-int. 23. And during the cutting of a field of sixteen and a half acres you were struck twice, you are certain, and perhaps more; that is right, is it not?

A. Yes, sir.

Redirect examination by Mr. BENNETT:

Int. 1. You say you think you could cut as much as one acre and a half. Do you mean you cut that altogether, or do you mean you cut that much on one occasion, or about that much nearly?

A. By sitting on the machine?

631 Int. 2. Yes, sir?

A. Yes, sir; I say I cut that much by sitting on the machine.

Int. 3. That much altogether?

A. Yes, sir; altogether—at different times.

Int. 4. You don't mean that you cut a sixteen-acre field by sitting on the machine?

A. No, sir; because a man was not safe to do it; because in some places the field is level and sometimes it is not level. There are variations, ups and downs in the field, and a man was not safe to sit on the machine.

Int. 5. And in that whole field of sixteen acres you say you cut about as much as one acre altogether?

A. Well, anyhow, as much as that, but I could not say how much more.

Int. 6. And it was on several different occasions?

A. Yes, sir; on different occasions.

Int. 7. You think you never cut more than a round or two at any one time?

A. A round, maybe two, and sometimes maybe not so much.

Int. 8. During the rest of the time you were sitting upon the horses?

A. Yes, sir.

Int. 9. And you found it to be unsafe to sit upon the seat?

A. Yes, sir.

Int. 10. And on uneven ground to be impossible?

A. Yes, sir.

By Mr. LATROBE:

Int. 11. How many horses did you drive in the machine?

A. Well, if I mistake not, I drove three, and sometimes four, and sometimes two. I worked the machine with two horses. Some part of our land is very level.

632 D. L. SMYSER, recalled and cross-examined by Mr. BENNETT:

Cross-int. 1. Did you purchase a self-raking machine from Mr. Reuben Hoffheins at any time; and, if so, when?

A. Yes, sir; in 1862.

Cross-int. 2. How do you fix the date of the purchase?

A. I have a receipt, and I have it also in a pass-book that I have at home.

Cross-int. 3. What is the date of that receipt?

A. The reaper was paid for in 1863, but the date that I fetched the reaper was the 20th June, 1862; that is the day I took the machine away from Mr. Hoffheins.

Cross-int. 4. At the time you got that machine at Mr. Hoffheins' shop did you see any other machines there?

A. There were other machines there; yes, sir.

Cross-int. 5. Did you have any conversation with Mr. Hoffhein' at that time in reference to the machine?

A. When I took the machine away, I took it as a grass-machine—as a grass-cutter, without the reaping apparatus to it.

Cross-int. 6. When did you get the reaping attachment?

A. I got the reaping attachment the latter part of June, a week or so after I had taken the machine away.

Cross-int. 7. At the time you took the reaping attachment from Mr. Hoffheins' shop, did you have any conversation with Mr. Hoffhein' in reference to the same?

A. When I went for a rake and a platform for the reaping-machine there was a machine put up there; I told him that I thought the machine was too weak for our grain. Mr. Hoffhein' stated that they had cut green rye with it; I told him it might have cut it, and he said it raked it off, and he said that it raked the green rye off.

633 Cross-int. 8. Was that in the year 1862?

A. Yes, sir.

Cross-int. 9. Do you know of Mr. Hoffhein' having made any self-rakers prior to that time?

A. I do not.

Cross-int. 10. Did he so inform you?

A. I do not know whether he did at that time or not. I hardly think he did say anything about it. Of course they had some self-raking machines there when I got mine.

Cross-int. 11. Was that the first year of Mr. Hoffhein' making self-raking machines?

A. I think it was.

Cross-int. 12. Had the machine which you purchased a seat?

A. Yes, sir.

Cross-int. 13. What was the shape of the seat?

A. The letter S.

Cross-int. 14. Where was the seat located?

A. Between the two driving-wheels.

Cross-int. 15. Was there any other place for the seat on that machine?

A. I do not think there was. I never used no other one.

Cross-int. 16. For what was that seat used?

A. We used it in cutting grass.

Cross-int. 17. Did you ever use it for reaping?

A. No, sir.

Cross-int. 18. Why not?

A. Well, we could not use it for reaping.

Cross-int. 19. Please explain why you could not use it for reaping.

A. Why, the rake-levers would have knocked a man off the seat; he could not have sat on; it would have struck a man in the back.

Cross-int. 20. Would it have made any difference, do you think, if the seat had been placed in any other place on the machine?

634 A. I do not know; I could not see where it could have been placed where a man could have sat on.

Cross-int. 21. Did your machine work successively or did it break?

A. It worked successively in grass, but it did not work successively as a reaper.

Cross-int. 22. How often do you suppose it broke during the first year you had it?

A. I do not know; I guess it broke very nearly every day, or every other day.

Cross-int. 23. Did you ever use the machine for reaping on uneven ground?

A. Yes, sir; we have hilly ground where I live.

Cross-int. 24. How did the rake operate?

C. On even ground the rake operated all right, but if you got into a furrow with the inside driving-wheel it would fall down, and that would throw the rake-post over on the driving-wheel.

Cross-int. 25. How near then would the beater-arms come to the outer wheel?

A. I do not know.

Cross-int. 26. How near to the main frame?

A. Well, I cannot say just how near they would have come; may be they might have come down within two feet of the outside wheel; I guess fully that close.

Cross-int. 27. And was this frequently the case when reaping on uneven ground?

A. In a field there are sometimes furrows and hollows. When the driving-wheel would drop down into one of them that would raise the platform out on the outside, and would throw the rake-post on the driving-wheel.

Cross-int. 28. Then it makes a great deal of difference in a reaper whether you are using it on level or on uneven ground?

A. Yes; or at least it did in that one.

Cross-int. 29. Was your machine remodeled after you had purchased it?

A. My machine was remodeled in 1863.

635 Cross-int. 30. What was done to it, if you know?

A. I think he changed the chain that was used in the first place, to a kind of a slide bar.

Cross-int. 31. Do you mean the driving-rake?

A. Yes, sir; I mean the driving-rake.

Cross-int. 32. Did he make any other alterations; and if so, what?

A. I think he altered the post in 1863.

Cross-int. 33. In what way?

A. I think he made it lower.

Cross-int. 34. Did he give you any additional seat?

A. No, sir; I never had but one seat.

Cross-int. 35. Have you any knowledge of your brother Zachariah Smyser having purchased a machine from Mr. Hoffheins?

A. Yes, sir.

Cross-int. 36. When was it, if you know?

A. He purchased his machine in 1861.

Cross-int. 37. What kind of machine was it?

A. I think he had a Hoffheins machine without a rake on first, in 1861—a hand machine.

Cross-int. 38. Did he ever get a rake attachment for it?

A. I think he got a rake attachment in 1862.

Cross-int. 39. How do you fix that date?

A. He used his machine in 1861. Me and my brother began farming in the spring of 1861, and he used his machine as a hand machine in 1861.

Cross-int. 40. Then, when did he get the attachment?

A. In 1862 he got the attachment.

Cross-int. 41. After your machine was remodeled in 1863, how did you find it worked?

A. My machine worked better after I had it remodeled in 1863.

Cross-int. 42. Did the rake break then?

A. Occasionally, but, of course, not so often as it did in 1862; it had been made stronger.

636 Cross-int. 43. After you got your machine from Mr. Hoffheins, did you give him a certificate as to the merits of the machine?

A. No, sir; he never asked me for one.

Cross-int. 44. You never gave him anything of the kind?

A. No, sir.

Redirect examination by Mr. LATROBE:

Int. 1. When the machine broke where did it break?

A. It broke several times at the rake; most always at the rake.

Int. 2. Where did you find it broke in the rake? Did it not break in the casting, which attached the rake to the head of the rake-post?

A. Yes, sir; it broke several times.

Int. 3. Was not that the place where it broke?

A. Yes, sir; it broke there.

Int. 4. Where else did it break?

A. The levers broke several times.

Int. 5. What do you mean by the rake?

A. The rake-levers—the rake-arms.

Int. 6. In 1863, I understand that these parts of the machine were strengthened?

A. Yes, sir; and after that it worked very well.

Int. 7. It worked right well after that?

A. Yes, sir.

Int. 8. This machine was delivered to you in June, 1862, you say?

A. Yes, sir; I took it away from Mr. Hoffheins' shop.

Int. 9. And I think you say you then remarked other machines in Mr. Hoffheins' establishment for sale.

Ans. There was a machine standing there put up; that is, all ready to cut grain.

637 Int. 10. Were there any other machines?

Ans. There were some other machines around there.

Recross-examination by Mr. BENNETT:

Cross-int. 11. Were there any other self-raking machines in Mr. Hoffheins' shop at the time, other than the one that was already set up?

Ans. I don't know; I don't think there was.

Cross-int. 12. You have said that the rake-arms broke. What caused them to break?

Ans. They were too weak for the grain.

By Mr. LATROBE:

Int. 13. Did you make an examination with a view to determine whether there were any other machines there?

Ans. I did not; no, sir.

By Mr. BENNETT:

Cross-int. 14. And did you understand that to be the machine that Mr. Hoffheins had tried in the green rye?

Ans. I understood that to be the machine that they tried in the green rye.

Signature of witness waived by consent of counsel.

ZACHARIAH W. SMYSER, a witness produced on behalf of the defendants, being duly sworn, testified as follows:

By Mr. BENNETT:

Int. 1. What is your name, age, residence, and occupation?

Ans. Zachariah W. Smyser; I am 48 years old; my residence is at York; I am a liquor dealer.

638 Int. 2. Are you acquainted with Reuben Hoffheins; and, also, when did you first make his acquaintance?

Ans. It was somewhere about the year 1860, or 1861, or '62, along there. I had known Mr. Hoffheins before I got the machine from him.

Int. 3. In what business were you engaged in 1861?

Ans. Commenced farming in the spring of 1861.

Int. 4. When you commenced farming did you purchase a reaping-machine; and, also, from whom?

Ans. I heard of the machines, in the first place, from Hanover, but it would not work the grass very well, and I afterwards got one from Mr. Hoffheins.

Int. 5. This was in 1861, I understand you?

Ans. It was in 1861, yes, sir; it was in 1861, the same year I commenced farming.

Int. 6. What kind of a machine was this?

A. The one that I bought from Mr. Hoffheins?

Int. 7. Yes, sir.

A. It was a reaper and mower combined.

Int. 8. Was it a hand-raker, or a self-raker?

A. The first summer I think I used a hand-raker on it.

Int. 9. Was that machine ever changed?

A. Yes, sir.

Int. 10. When was it changed?

A. I think he changed it in 1862.

Int. 11. What change was made?

A. He put a self-rake on.

Int. 12. About what time of the year was it that this self-rake was put on, if you remember?

A. It was about harvest time, when we commenced to harvest, or a little before; it was just before we commenced cutting harvest.

Int. 13. At the time you purchased that self-raker from Mr. Hoffheins, in 1861, had he any self-raking machines?

A. Not that I know of, in 1861.

Int. 14. Do you know of his having made any prior to the season that you got your self-raker?

A. Not that I know of.

639 Int. 15. Had your self-raking machine, which you purchased in 1862, a seat on it?

A. Yes, it had a seat on.

Int. 16. What was the shape or style of the seat?

A. Well, it was a letter S—a spring seat, a cast-iron seat. The spring was in the shape of a letter S, and then it had a cast-iron seat on top of it.

Int. 16. Where was that seat located?

A. It was located between the two driving-wheels.

Int. 17. For what purpose was that seat used?

A. We used it for grass cutting—driving with check lines.

Int. 17. Was there any other place on the machine where that seat could have been put?

A. I think not.

Int. 19. Did you ever use that seat when reaping?

A. Not with a rake. We never used it with a rake.

Int. 20. Why not?

A. We could not have used it, I don't think; we could not have sit on it.

Int. 21. Explain why you could not set on it.

A. On account of the rake. The rake would strike you if you would set on it.

Int. 22. Are you positive that it was impossible for a man to have occupied that seat during the operation of reaping?

A. Yes, sir.

Int. 23. Would it have made any difference had the seat been placed on some other portion of the machine?

A. I don't think it would have.

Int. 24. Were you ever instructed by any one that that seat was to be used when reaping?

A. No, sir; I never was instructed by Mr. Hoffheins to use it.

Int. 25. You always used it, though, in mowing?

A. In grass cutting; yes, sir.

Int. 26. How did the self-raking machine which you got from Mr. Hoffheins in 1862 work?

A. Well, it did not work well in 1862.

Int. 27. What was the trouble with it?

640 A. It would get out of repair.

Int. 28. Did it break, and, if so, in what respect?

A. Sometimes it would break; but in the first place it would get out of repair. It worked with a chain, and that would give.

Int. 29. Was that machine of yours ever remodeled; and, if so, when?

A. It was remodeled, I think, in 1862 and 1863. The whole thing was remodeled after I had used it the first harvest—that is, the rake part, not the running part of the machine.

Int. 30. Did you ever use that machine on rolling or deep-furrowed ground?

A. Yes, sir; I did.

Int. 31. How did the machine operate when used on furrowed or rolling ground?

A. If you would get into a ditch or an old furrow with the driving-wheel the post would strike the driving-wheel. You see it was hung loose at the driver so that it would give.

Int. 32. On such occasions, when the rake-post would strike the inner driving-wheel, how near did the rake-arms and beaters come to the outer driving-wheel or main frame of the machine?

A. Well, I think, if I mistake not, it came out as fully as far as the outer driving-wheel.

Int. 33. Did it ever strike the outer drive-wheel?

A. Not that I can recollect.

Int. 34. How near did they come to striking it.

A. I couldn't tell how near they came to striking it. I don't think they ever struck the outer driving-wheel. Nothing would strike but the post. The post would strike the inner drive-wheel.

Int. 35. Would it make very much difference in the heighth of the rake-arms and beaters from the main frame when the machine had dropped into a furrow, as you have described, than when it was standing level?

641 A. If it would strike, you had to get out of that furrow, of course. I don't suppose it would make much difference in the heighth of the arms from the machine.

Int. 36. When you use the machine as a reaper, did you take the seat off or leave it on?

A. No, sir; we always took it off.

Int. 37. Why was that?

A. Well, I always thought we couldn't sit on it and couldn't use it; so we took it off. I was satisfied that we couldn't sit on it.

Int. 38. Was there any liability of the rake striking the seat itself, even without a driver on the machine?

A. I am not able to say whether it would or not.

Int. 39. Did you see anybody sit or attempt to sit on the Hoffheins machine during the operation of reaping?

A. I did not.

Int. 40. Did you ever see any other machine than your own?

A. Of that make?

Int. 41. Yes, sir.

A. I have seen other machines work; yes, sir.

Int. 42. Do you know of your brother having purchased a machine from Mr. Hoffheins?

A. He had one of the same kind I had.

Int. 43. Did you ever see that work?

A. I have seen it work; yes, sir.

Int. 44. Did you ever see a driver sit upon that machine?

A. Not in cutting grain.

Int. 45. Could a driver sit upon that machine in cutting grain?

A. I don't suppose he could.

Int. 46. Where was the seat located in that machine?

A. In the centre; between two drive-wheels.

Int. 47. Do you know whether your rake was one of the very first made by Mr. Hoffheins?

A. I think it was about one of the first ones.

Int. 48. Did he so inform you?

A. I don't recollect as he did.

642 Int. 49. What leads you to believe that the rake which you got from Mr. Hoffheins was one of the first?

A. I recollect me and my brother Dan were the only persons in that neighborhood that had the machine first, and I know that I had my machine before he had his, and then Mr. Hoffheins afterwards put a rake on. I am most positive that I got my machine in 1861, and then in 1862 he put a rake on.

Int. 50. You are equally positive, are you not, that, so far as you know, Mr. Hoffheins had no self-raking machines in 1861, when you purchased your hand-raker?

A. Not that I know of; I didn't know of any.

Int. 51. Do you remember giving Mr. Hoffheins a certificate as to the merits of his machine?

A. I don't recollect of doing so.

Int. 52. You have no knowledge of such a thing?

A. No, sir.

Cross-examination by Mr. LATROBE:

Cross-int. 53. Did you ever make it your business to go through the establishment of Mr. Hoffheins in 1861 to find what kind of machines he had there for sale?

A. I think I was in his place in 1861.

Cross-int. 54. That is not my question. My question was "Did you ever make it your business to go through the establishment of Mr. Hoffheins in 1861 to find what kind of machines he had there for sale?

A. I was there in 1861 to look what kind of machines he had.

Cross-int. 55. Did you ever go through his establishment with a view to see whether he had any self-rakers there in 1861?

A. I do not recollect that I did.

643 Redirect examination by Mr. BENNETT:

Int. 56. About what time of the year in 1861 was it that you purchased this hand-raker?

A. It was about grass-cutting time—hay-making.

Int. 57. You say you were at his shop at the time you purchased the machine?

A. I was at his shop in 1861. He showed me the kind of machine that I got.

Int. 58. Did you go through his shop or his store-room where he had his machines at that time?

A. I think I went through his shop.

Int. 59. How large a shop had Mr. Hoffheins at that time?

A. Indeed I could not tell you how large it was.

Int. 60. At the time you purchased your machine in 1861, did Mr. Hoffheins try to sell you any other style of machine other than the one you got?

A. No, sir; I don't think he did.

Int. 61. Had he any other style of machine there for sale?

A. I didn't see any.

By Mr. LATROBE:

Int. 62. You didn't see any?

A. I didn't see any but the kind of machine that I got.

Complainants' counsel, when asked for the witness Bell, examined at York, Pennsylvania, June, 1878, for the purpose of being cross-examined

here, stated that, without acknowledging the right of the defendants to call upon the complainant to produce for cross-examination any witness who had been examined upon due notice, nevertheless, with a view of obviating all difficulty at the hearing, and without waiving his rights in the premises, produced the witnesses that have been cross-
644 examined yesterday and to-day, with the exception of the witness Bell, to whom the counsel had himself addressed a most urgent letter on Saturday, the 9th instant, which letter was mailed from his office, whereupon Mr. Hoffheins telegraphed requesting him to be present either yesterday and to-day.

Defendants' counsel states that the examination in June was prece'ded with under a misunderstanding between Mr. Christy and himself, and that after Mr. Christy was notified of the circumstance, it was understood that the witness should be tendered for cross-examination, and hence no objection was taken or no motion made to strike the deposition of this witness from the record, but that as the witness Bell has not been tendered for cross-examination, objection is now made to his deposition being made use of at the hearing.

645 *Defendants' Exhibit, Brown Patent.*

No. 40395, October 27th, 1863. Improvement in harvesters. Certificate. Petition. Specification.

To all whom it may concern:

Be it known that I, Robert Brown, of Frederick, in the county of Frederick and State of Maryland, have invented certain new and useful improvements in grain and grass harvesters, and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, in which Fig. 1 represents a perspective view of said harvesting machine.

Fig. 2 represents a longitudinal vertical section through the same.

Figs. 3, 4, 5, represent detached views, hereafter to be referred to.

Figs. 6, 7, 8, represent views of the cutting appa'tus of my machine.

My invention consists, first, in the combination with the angu-
646 lar side pieces of the main frame of two short wheel axles, which support the driving-wheels of the machine.

Also in the combination of clearers which are attached to the lower sides of the sickle, with the open guard-fingers, having spaces under and to the rear of the cutting edges of the blades for the purpose of clearing the guard-fingers from damp grass or other material which tends to clog the machine.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A represents the main frame of the machine, to which the tongue or pole B is rigidly attached; the braces C which support the seat D are also secured to this frame. The main frame A consists of the longitudinal bars 1, the shape of which is shown in cross-section in Fig. 4. These side pieces are bolted to the front cross-tie 2, and are braced together near the rear by means of the braces *a*, *b*. By this means I obtain a frame of a very simple and cheap construction, which may be made of wrought iron, and therefore of comparatively light material, but the principal advantage in this construction is that the rear end of the frame is open, and therefore the swinging frame E, to which the

cutting apparatus is attached, may be easily secured at almost any point on the bars 1, there being nothing to obstruct its movement at the rear end of the frame. The braces *a* and *b*, which are intended to impart steadiness to the main frame, do not interfere with the action of the frame E, as the brace *a* is above its limit of motion, and the brace *b* prevents it from moving downward beyond its intended limit.

The swinging frame E is hung to the stationary shaft or bar F, on which it turns on being raised, or lowered by passing over uneven ground, it being supported in its lowest position by the brace *b*, which prevents it from descending further than it is intended, according to the construction of the machine.

647 The finger-bar G is secured to the head *d* of the shaft H by means of the bolt *e*, and said finger-bar may be raised and lowered by the lever arrangement commonly used in harvesting machines for that purpose, in connection with a rope or chain, which is secured to the shoe-plate I of the finger-bar, said lever arrangement and one of the driving-wheels being left off on the drawings, as it would cover other parts which it is essential to show thereon.

The axles K of the driving-wheels are secured to the stationary frame A in the following manner: The upper end of the axle is flattened so as to fit against the horizontal part *x* of the bar 1, while the but end comes up close to the vertical part *y* of said bar. A stirrup bolt, *g*, which enters a corresponding groove on the circumference of the axle, is then passed around it, and is secured to the part *x* by means of the screw-nut *s*; the axle K being snugly fitted on the parts *x* and *y* cannot move sideways, and constitutes a cheap and simple construction for harvesting machines, reducing the weight of the machine by raising two short axles instead of one long one.

This feature is of great importance in harvesting machines, in which a hinged cutter-bar frame is used within the main frame, as by the application of the two short axles which extend outside of the main frame, no part of said axles obstructs the free motion of the inner hinged frame.

To raise and lower the grain end of the cutting apparatus, for the purpose of regulating the length at which the grain is to be cut, I make the grain-wheel L adjustable, and use the following device: M represents the shaft of the swivel-wheel, to this shaft is secured the slotted-arc *h*, the piece *i* which supports the grain-wheel L is pivoted at *k* to the shaft M, and its arm 3 may be secured at any desired position on the arc *h* by means of the set screw 4, which passes through the slot of the arc *h*; thus the grain-wheel may be raised or lowered to cut the grain high or short, and may be secured in any position by means of the set screw.

648 The cutting apparatus of my machine is represented in Figs. 6, 7, and 8. A represents the finger-bar to which the guards *v* are secured; they have a wide opening, *m*, to the rear of the cutting apparatus, which extends backwards to the finger-bar. In Fig. 7 the blades of the cutting apparatus are represented in a reversed position, *n* represents the cutters or sickle knives for cutting the grain; *o* represents the sickle-bar, and *p* represents cutters, which are secured to the lower side of the blades *n*. When the sickle-bar and knives are placed in their proper positions within the guard-fingers, the cutters *p* work within the groove in the guard which is formed by the projections *q* and *r*, and the grass, which tend to clog the machine, works out under the cutters and to the rear of the cutting edges, and passes out through the openings *m*, which are constantly kept clear by the action of the

cutters *p*, which work against the edges *n* of the guard-fingers, thus preventing the machine from clogging by damp grass or other material getting in between the cutting apparatus.

Having thus fully described the nature of my invention, what I claim herein as new, and desire to secure by letters patent, is—

I claim in combination with the angular side bars 1, of the main frame A, and the inner hinged frame E, the two short wheel axles K, when constructed and arranged substantially in the manner and for the purposes herein described.

I also claim in combination with the open guard-fingers having spaces, *m*, under and to the rear of the cutting edges of the blades, the clearers *p* at the lower sides of the blades, when said clearers operate above the spaces *m*, and when constructed and srranged substantially in the manner herein described.

ROBERT BROWN.

Witnesses:
E. L. EADER.
J. M. HARDING.

649 *Hoffheins' reissued patent* 2224, 1866. *Certificate. Petition.*

The schedule referred to in these letters patent and making part of the same.

To all whom it may concern:

Be it known that I, Reuben Hoffheins, of Dover, in the county of York, and State of Pennsylvania, have invented certain new and useful improvements in machines for harvesting grain and grass, and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification in which

Figure 1, sheet 1, is a plain or top view of a harvester embodying my invention.

Figure 2, is a vertical section of the combined rake and reel of the harvester detached from its supports.

Figure 3, is a plan or top view of the same mounted upon its support—the arms of the rake and reel are shown as partly broken off.

Figure' 4, 5, and 6, are details of part of the mechanism for driving the combined rake and reel, and for inverting the rake and reel arms.

Figure 7, sheet 2, is a side elevation of the harvester through the draft frame, the rake platform and other parts being shown in elevation.

650 Figure 8, is a side elevation of the machine, seen from the grain side of the platform.

Figure 9, is a rear elevation of a portion of the machine, showing the manner of suspending the rake and reel support upon the hinge joint finger-beam, or platform thereof.

Figures 10, 11, and 11½, are details of the harvester, showing more plainly the devices for tightening the driving-belt during the rising of the finger-beam on its hinge joint or joints; also, the clutch-pull'y by which the rake is ungeared.

Figure 12, is a perspective view of a portion of the machine, as seen from the rear thereof.

Similar letters of reference in the several figures indicate corresponding parts.

In the application of automatic rakes to harvesters which employ a

"hinge-joint cutting apparatus," it is important to have the rake so contrived that the application may be readily made to the approved and commonly used side draft machines which are constructed with the "single" or the "double joint cutting apparatus."

It is also important to have the axis of the rake suspended between the inner drive-wheel and the outer shoe or divider; or at the left of the suspending hinge joint of the finger-beam and platform, and near to the heel of said beam—and in connection with this arrangement or location of the axis or support of the rake, it is also important to have the suspension of the rake made in such a manner that the base of the support of the axis of the rake is wholly upon the hinged finger-beam, or the platform thereof; and also that the rake, the finger-beam, and the platform shall be rigidly connected together, and still be free to rise together the requisite distance by articulating on the single or the double hinge-joint connections and the suspension device of the harvester, so as to conform to the irregularities of the surface of the ground; or to move clear of stumps and other obstructions; and while thus rising to conform to the ground, or to pass obstructions, it is important that the great weight of the rake, finger-beam, and platform shall not cause the draft frame to tilt over on its right-hand drive-wheels by sudden
651 and abrupt motions, but shall tend to ensure a square run of the draft frame upon the ground during the "pitching," or rising and falling motions of the finger-beam, platform, and rake; and thus an even and easy draft for the team to be secured. And further, in this connection, it is important to have a rake suspended as above stated, in order that it may be applied in connection with a finger-beam and platform which are hung upon a "double hinge joint." I mean by a "double hinge joint," that character of connection which allows the cutting apparatus of harvesters to tilt up at its outer end on a hinge located nearly in line with the heel of the finger-beam, and also allows it to rise bodily at both its inner and outer ends on another joint or yielding connection, which is located some distance to the right of said heel of the finger-beam.

It also is further important in making an attachment of a rake to a harvester, to have as little obstruction as possible offered by the inner portion of the finger-beam, and by the suspending connections beyond the left-hand drive-wheel and beneath the draft-frame to the grass and other substances which are liable to accumulate and clog the machine; hence the finger-beam and cutting apparatus should terminate at or near the left-hand drive-wheel of the draft-frame.

It is also further important in connection with a combined rake and reel mounted upon a hinge-joint cutting apparatus, and also in connection with any rake and with any reel mounted upon such a cutting apparatus, to so apply the endless driving-belt, or its equivalent, that it shall not be allowed to become "slack" and slip on its pulleys by reason of the cutting apparatus, and rake or the reel rising and falling in conformity with the surface of the ground.

In order that others skilled in the art to which my invention relates, may be enabled to fully understand and use the same, I will proceed to describe one practical mode of constructing and using the same. But I do not limit myself strictly to the details of construction herein given.

In the drawings, A represents the draft-frame, consisting in this
652 instance of three longitudinal and two transverse beams, a tongue, an axle, and two supporting wheels. The left-hand supporting wheel B is made fast on the axle, while the right-hand supporting wheel

C is left loose so as to revolve free of the axle. Any well known way of attaching these wheels and controlling them may be adopted.

D is the finger-beam, and E the platform of the harvester, the cutting apparatus and guard-fingers being left off. E is a support for a combined rake and reel. This support is mounted rigidly upon the inner front corner of the platform and heel of the finger-beam, but it may be mounted either wholly on the finger-beam or wholly on any part of the platform, which is to the left of the left-hand drive-wheel B, or to the right of said drive-wheel if it is a right-hand machine. From the platform or finger-beam the support may extend in an inclined position as high as the top of the draft-frame and then take a turn over toward the centre of said frame as represented, so as to form a support for the rake and reel, which shall be somewhat higher than the frame, and between the two drive or supporting wheels. The particular shape and height of this support is not very material, so long as the base of it is affixed at some point between the centre of the main frame A, and the outer shoe or divider G. The finger-beam which I adopt does not extend to the right beyond the left-hand drive-wheel B, and the platform is of the quadrant form, with the inner front corner cut away as represented. The particular form of the platform is not very material, but its inner corner should not extend much beyond the left-hand drive-wheel B.

At the upper end of the support F, a sweep-rake of the character represented, or of any other suitably constructed, is attached so as to revolve or turn upon its axis. I shall hereinafter particularly describe the rake which I have represented.

The finger-beam, platform, and rake I suspend and stay in the following manner:

On the front transverse beam of the draft-frame at the left of the left-hand drive-wheel B, I construct a swiveling device *a*, and to this device an inclined draw-bar *b* is hinged or jointed as at *c*. This draw-bar
653 is extended back to near the rear end of the draft-frame into the form of a shoe 20—or a separate inner shoe may be first constructed as a part of the cutting apparatus and this draw-bar connected rigidly to such shoe. In either case the finger-beam and the inner corner of the platform are attached rigidly to the rear part of the draw-bar as represented.

At a suitable angle to this draw-bar an inclined bar or rod, I, extends from the under side of the right-hand longitudinal beam of the draft-frame to the draw-bar. This bar or rod I is connected at its respective ends to the draft-frame and to the draw-bar by means of joints *d e*, which allow a vertical movement of the finger-beam, platform, and rake.

The joint connection *a*, is in the same longitudinal path as that of *e*, but is at a different altitude; the joint connection *d* is diagonal to that of *a*, so far as arrangement or location is concerned, but is on about the same level therewith. All these joint connections are, or may be, in a straight line with the "rim" of the machine, although arranged in different paths.

From the inner corner of the finger-beam or platform, or from the metal foot-piece 9 of the rake and reel support, by which the support is screwed to and braced on the platform and finger-beam, a strong bracket, 2, is extended beyond the left-hand side beam of the draft-frame. To the extremity of this arm a swinging link or chain, *f*, is loosely connected or jointed as at *g*, and by means of this link or chain the finger-beam, platform, and rake, although arranged at the

left of the left-hand drive-wheel B, can be suspended from a point which is to the right of the said left-hand side beam. The suspension is effected by ranging the upper end of the link or chain to the rear beam of the draft-frame, as represented at *h*.

In order to stay the rake, a diagonal rod, *i*, is rigidly fixed to the drag-bar *b* and to the rake support F, as represented

From this description, it will be seen that the finger-beam, platform, and rake are entirely suspended and braced by devices which can articulate free of the draft-frame—or, in other words, these parts in articulating do not tilt the draft-frame. The arrangement is also such that the top portion of the draft-frame is not cumbered with the
654 rake support. The arrangement is also such that a well balanced and a very light and cheap automatic raking harvester can be produced. The arrangement, likewise, is such that a short finger-beam, short of narrow platform, and a rake with a short sweep can be adopted; and thus a chance for grass and rubbish to hang upon and clog the machine at a point in rear of the draft-frame is avoided. Much labor of getting the grain off the platform is also saved.

The apparatus which I have represented for getting the grain properly up to the cutting apparatus before it is cut, and off of the platform after it is cut, consists as follows:

J is a horizontal crown-wheel with cog-teeth on its under side. This wheel has a vertical conic-shaped axle, J^1, projecting from its under face, and said axle is set down into the metal box K, attached to the upper portion of the support F, as represented. The crown-wheel and its axle revolve together—any upward movement being prevented by the nut *j*, which fastens the wheel to the box K. On the top of the crown-wheel, at equal distances apart, four lugs, *k k k k*, are formed, and horizontally through these lugs round holes are formed, and through these holes two shafts, K^1, crossing each other at right angles and centrally, are passed, as represented, so as to revolve a certain distance. At each end of the respective shafts a circular wheel, *l*, with a toothed segment, l^1, formed on its circumference, is affixed rigidly. Each of these wheels has a stop-pin, *m*, projecting from its inner face over a shoulder, m^1, of the respective lugs *k k* of the crown-wheel, as represented. These pins and stops are so placed that the shafts k^1 k^1 can only revolve the length of the toothed segments. From the face of each of the segments an oblique bracket, 3, extends in the manner represented in figures 1, 2, and 3. The bracket at one end of each of the shafts k^1 k^1 extends downward in an inclined direction, and that at the other ends of each of the shafts extends upward in an inclined direction; thus forming angles with the shafts k^1 k^1, as shown in figure 2. These brackets are also made to form angles with radial lines through the crown-wheel, as indicated at 5 5 5 5. To one pair of these brackets angular reels L L^1 are rigidly fastened, and to the other pair angular rakes L^2 L^3 are similarly
655 fastened. The respective rakes and reels are arranged with the peculiar obliquity represented so as to more effectively operate upon the standing grain, and also remove the cut grain from the platform. It will be observed that they stand oblique to a vertical and a horizontal plane.

The angular form of the rakes and reels enables me to employ a guide-way which is perpendicular to the top of the platform, as with this form the descent of one of the rakes, or one of the reels of the respective pairs of rakes and reels, necessarily causes an ascent or inversion of the other.

In order to produce a proper motion in the rakes and reels, the following devices are provided.

M is a stationary segment-plate with two concentric sets of cog-teeth d^2 d^3 on its upper face. This plate is cast with or fastened to the box of the support of the rakes and reel in such manner as to partly encircle the crown-wheel J. The toothed segments of the rakes, as shown in figures 1 and 2, take into the smaller segment d^2 of stationary cog-teeth, and the toothed segments of the reels take into the larger segment d^3 of stationary cog-teeth.

On the segment-plate M I have constructed horizontal ways or guides n o, for holding up the rakes and the reels on one side of the crown-wheel, while those on the other side are in the acts of reeling in and of raking off the grain. These guides are of just such a length that they set the rakes and reels free on one side of the crown-wheel the moment those on the other side thereof are done with their work and are turned up out of the way of the drive-wheel of the draft-frame. If the stationary teeth of the way M are in line with the way n, one of the teeth of the respective segment-wheels, in connection with the untoothed portion of said wheels, will serve to hold the rakes or reels of the respective pairs of rakes or reels in proper position. But if the way, as at o, is not in the same circle with the teeth, then a hooked-shape tooth, p, and another tooth, q, may be formed on the respective segments of the pair of rakes and reels, and the hooked tooth by passing between the flanges r r, which terminate at s, will answer for preventing the wheel segments turning before they are properly in gear with the teeth of the stationary segment, and as soon as the
656 wheel segments have properly turned the rake and reel of one pair of the rakes or reels, the other tooth q will rest upon the way o, and hold the rakes or reels from turning until the proper time. Either of the two plans for turning and controlling the rakes and reels may be adopted for the whole series of rakes and reels. In order to produce a rotary motion of the crown-wheel, I arrange two pinions, t t, on a shaft, u, which is supported on the box of the crown-wheel shaft. One of these pinions gears with the crown-wheel and the other with a pinion, v, of a pulley-shaft, w, which is supported on the segment of the box k, as represented. A shaft, w, carries a pulley, w^2, and from this pulley an endless belt, N, passes to and around a pair of small pulleys, w^2 w, and from thence to a sliding clutch-pulley, w^3, which is on a shaft, w^4, driven by cog-gearing w^5 w^6, the motion being derived from the axle of the draft-frame, as will be evident from the drawings.

In order to insure a positive action of the belt upon the pulleys I construct the support q of the small pulleys w^2 w^2 in two parts, 8 8, as represented in figure 11, and arrange a spring, o, to act upon the said support in such a manner as to always keep the belt taut. By having the pulley support made in two parts, one of which is cylindric and fits in a cylindric socket of the other part, as shown, the small pulleys are allowed a chance to swivel so as to accommodate themselves to all changes in position which the pulleys w^1 make by reason of the finger beam, platform, and rake rising and descending. The clutch-pulley is so arranged and made to gear with its shaft by means of a pin, x, ratchet-teeth y, and a spring z, that it can be thrown in and out of gear at will, and when the machine is backed will cease automatically to gear with its shaft.

The belt-tightener described will be found very useful in connection with all descriptions of reels and rakes which are mounted upon

a hinged joint finger-beam, or the platform thereof, and are driven by an endless belt.

In representing a rake and reel combined, I have shown two rakes in the same line and two plain reels in a line with one another, but it is obvious that any even number of rakes and reels may be
657 adopted, or that any number of the plain arms may be provided with teeth as preference or the nature of the work may dictate, and also that any other equivalent devices to those described for turning up and controlling the arms may be employed without departing from my invention, as I do not restrict myself to the specific means described for accomplishing the result.

It will be observed that the platform is so suspended at the left of the inner drive-wheel, and also so supported as to be capable of rising and falling to conform with the utmost freedom to the inequalities of the surface of the ground, and as the standard or support is rigidly mounted upon the platform that the rake and reel are supported in an unchanging position in relation to the platform, and that, too, without any obstruction to the free motion of either.

The mounting of the rake upon the platform or cutting apparatus causes the former not only to follow the vertical deflections of the latter, but to rise and fall with it as it is elevated and depressed. The correct relation, both in height and in angle, is thus maintained between the platform and rake under all conditions, while my mode of suspension is such that there is very little, if any, tendency to tilt over the draft-frame.

The spring belt-tightener is such that it maintains the band at an equal tension in all positions of the pulley, and thus insures a perfect operation of the reel and rakes under all circumstances.

The suspension of the rake and reel with the platform and finger-beam, by means of the extension 2 and link or chain, transfers the weight upon the draft-frame in such a manner that the said frame is kept square upon the ground, and besides, this mode of suspension lessens the extent of deflections of the rake, and renders them less sudden and abrupt.

OPERATION.

If it is desired to cut grass with the machine represented, the rake and platform with the wheel 10 are removed by unscrewing the metal foot-piece 9 and detaching the link *f*. This allows the shoe of the draw-bar to rest on the ground in customary manner, while the grain side of the machine rests upon the ordinary supporting shoe (not shown).
658 Thus both ends of the finger beam are left free to rise and fall, to conform to undulations in the surface of the ground. If it is desired to cut grain, the shoe of the draw-bar and the heel of the finger-beam, and the rake and platform which have been replaced are suspended by the link or chain, as represented and herein described.

The cutting apparatus, which is not represented, may be constructed and operated in any known and suitable way. As the rake-head or crown-wheel receives its continuous rotary motion from the endless belt, the respective pairs of reels and rakes are carried along with it, and during their circuit they are caused to assume the different positions represented in figures 1, 2, and 7 by the combined agency of their form, the segment-wheels, and segment-plate.

As each reel approaches the rear of the main frame, its cogged segment *t* takes in the cogs d^3, turning the reel backward and upward,

completely above the drive-wheels of the draft frame, and causing the reel which is attached in front to the same shaft k^1 to descend at the left side of the drive-wheel, where it operates to present and hold the standing grain to the action of the cutters, and so passes over the platform. By the time this last reel reaches the point to be elevated above the left-hand drive-wheel, the first mentioned reel has advanced so far as to pass off the way *o* and descend clear of the said drive-wheel, and so the work of reeling progresses. In like manner the rakes operate first as reels, and each passing backward in contact with platform, removes therefrom all the grain which has collected and deposits it in a gavel upon the ground. On passing off the platform the rake is held and guided, after being turned up by the segment-wheel *t* and the way *n*, until its fellow rake has finished its work. With the present arrangement, when the acting reel has passed off the platform it is held and guided by its tooth *p*, passing between the flanges *r r s*, and its cog segment t^1 is thereby presented in correct position to the cogs d^3, by means of which it is elevated, as above described. The elevated reel is sustained by the tooth *q*, resting upon the way *o*, which it has passed around sufficiently far to clear said way and descend clear of the wheel B, when the tooth *q* leaves the way *o*, and the reel is carried down by the ascend of its fellow reel.

659 In describing the location of my rake, or reel and rake combined, I have used the terms "right" and "left" simply in order to make myself understood as to what relation with respect to the grain side of the harvester the rake, or reel and rake combined, is to occupy. I wish to be distinctly understood that I do not confine my invention to a left-hand machine, as the rake, or rake and reel combined, if placed on the right-hand side of the machine in just the same location that it occupies on the left-hand side thereof, will operate in the same manner with the same results.

What I claim as my invention, and desire to secure by letters patent, is—

1st. A sweep-rake which is mounted upon the heel of the finger-beam proper, or upon the inner front corner of the platform of a harvester which has its cutting apparatus and platform hinged to the draft-frame, all in such manner that the rake-arm sweeps the platform from front to inner side, and maintains a correct position in relation to the finger-beam and platform during the rising or falling movements thereof on the joint or joints, by which the finger-beam is connected to the draft-frame, substantially as set forth.

2d. A rake rotating upon an axis which is perpendicular to the top surface of the platform, or nearly so, and having its arms successively turned up, substantially as and for the purpose described.

3d. The angular rake-arms rotated independently of the axis *f*, and controlled substantially as described, in combination with a guide-way which is perpendicular, or nearly so, to the said axis *f* of the rake-head, substantially as and for the purpose described.

4th. Elevating and depressing revolving rake and reel arms by means substantially as described, whereby I am enabled to dispense with an incline plane or cam-way, as set forth.

5th. An inclined standard or support, F, or its equivalent, rigidly mounted upon a loosely hinged platform or finger-beam, and adapted for supporting a sweep-rake in a unchanging position in
660 relation to said platform without obstructing the free motion of the platform, or finger-beam, substantially as described and shown.

6th. A standard or support, F, which sustains the sweep-rake above the draft-frame or driving-wheel thereof, said standard being mounted directly and wholly upon a hinged finger-beam, or the platform thereof, substantially as described, and for the purpose set forth.

7th. A revolving tooth-head or crown-wheel, J, constructed with supports for rake and reel arms in pairs, said supports being arranged outside and around the axis of said wheel J, substantially as and for the purpose described.

8th. In a harvesting machine which has its cutting apparatus hinged or jointed to the main frame in such manner as to allow it to conform at both ends to the undulations of the ground, and a rake mounted upon the said jointed cutting apparatus, or upon the platform thereof, I claim so constructing and arranging the several parts, that the support of the rake can occupy a position outside of the inner drive-wheel, B, or a position which is between the point of suspension *h* and the outer divider, G, and can also be hung or be suspended below the draft-frame, substantially as described.

9th. Effecting a combination of a rake and reel located substantially as described, and a finger beam and platform with the main frame by means of a hinged draw-bar, *b*, and hinged brace I, a hinged suspender, *f*, and an extension bracket, 2, or their equivalents, substantially as and for the purposes described.

10th. The combination of a rake and reel, a yielding draw-bar, *b*, inner shoe of the cutting apparatus and hinge joint *e* on the draw-bar, substantially as and for the purpose described.

11th. Preventing a too sudden or abrupt deflection of a rake and reel mounted upon a hinged joint cutting apparatus, by carrying the point of suspension beyond the rake support toward the centre of the draft-frame, by means substantially as described.

661 12th. A continuously revolving rake, which is mounted directly and wholly upon the platform or finger-beam, so as to rise and fall therewith independently of the draft-frame, when said rake is located between the centre of the draft-frame and the outer divider, and passes in at the front of the machine upon the platform and sweeps around to the inner side of the platform, substantially as described.

13th. The combination with a doubled hinged joint combined reaping and mowing machine, of a sweep-rake, which enters at the front of the machine upon the platform in such manner that the rake and cutting apparatus rise and fall together while reaping, and also in such manner that the rake and platform may be readily removed and the cutting apparatus at its inner and outer ends allowed to float upon the ground, and to accommodate itself at both ends to the undulations of the ground, substantially in the manner described.

14th. The combination of a suspended hinge-joint cutting apparatus of harvesters, and a combined rake and reel, which is mounted directly and wholly upon the suspended platform or hinged finger-beam, substantially as and for the purpose described.

15th. Controlling the rake and reel arms by an upper and lower guide, between which an attachment of the respective rake and reel arms passes, substantially as described.

16th. The combination of a combined rake and reel, mounted upon a hinge-joint cutting apparatus and a yielding belt tightener, substantially as and for the purpose described.

17th. The employment of a yielding belt or chain tightener, or its equivalent, in connection with harvesters which are constructed with

a hinged joint-cutting apparatus, substantially as and for the purpose described.

18th. The pulley support Q, with its pulleys w^2 W^2, in combination with a band or chain N, and pulleys W^1 W^3, substantially as and for the purpose set forth.

662 19th. Providing in a harvester with the rake attached to its hinged finger-beam or platform an extensible means for driving the rake, which will permit the platform and rake to rise and fall together, and accommodate themselves independently of the draft-frame to the undulations of the ground, substantially as described and for the purpose set forth.

REUBEN HOFFHEINS.

Witnesses:
OCTAVIUS KNIGHT.
CHARLES SMITH.

Defendants' Exhibit Hoffheins' Original Patent 1862. *Certificate. Petition.*

The schedule referred to in these letters patent and making part of the same.

To all whom it may concern:

Be it known that I, Reuben Hoffheins, of Dover, in the county of York, and State of Pennsylvania, have invented certain new and useful improvements in machines for harvesting grain, and I do hereby declare the following to be a full and exact description of the same, reference being to the accompanying drawings, making part of this specification, in which—

Fig. 1 is a plan of a harvesting machine with my improvements.

Fig. 2 is a side elevation of the same with one wheel removed.

Fig. 3 is rear elevation.

663 Similar letters of reference indicate corresponding parts in the several figures.

My said invention consists of certain improvements in the manner of mounting and operating a revolving rake, as will be hereinafter more fully explained.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operations.

A represents the main frame of the machine, and a^1 a portion of the draft pole; B is a driving-wheel secured to the axle C, and B^1 a wheel running loosely on the said axle; D is a segmental platform, provided with a divider, E, at its outer end, and resting upon a roller, *e*; F is a draw-bar, connected at front by a universal joint to the frame A, and attached at back to a shoe, *f*, upon which the inner side of the platform may rest; G is a lateral brace rod, hinged at one end beneath the right hand rear corner of the main frame, and at the other to the draw-bar F, or shoe, *f*; H is a link by which the inner end of the platform is suspended from the back of the main frame; I is a post rigidly secured to the inner side of the platform and inclining over the rear of the main frame; *i* is a brace-rod extending from the draw-bar to the said post, to support the latter at top; J is a box mounted on the top of the post I, and constituting the bearing in which the disk K rotates. The rakes or reel arms L L^1 are mounted in couples upon the ends of horizontal shafts M M^1, which are journaled at right angles across the rotating disk K. The oblique positions of the rakes upon their shafts M M^1 are

clearly shown in the drawings, and the manner in which they are elevated to pass over the frame, and lowered to incline the standing grain over the cutting apparatus, and remove grain from the gavels on the platform will be hereinafter explained; *c* is a cog-wheel secured to the shaft C, and gearing with a pinion, *n*, upon a secondary shaft, N, which carries also a clutch, pulley, O, fitted loosely thereon, but rotating when the machine is moving forward by means of a pin, *n*, upon the shaft taking into the notched teeth upon the face of the pulley O; *o* is a spiral spring employed to hold the pulley in contact with the pin *n*.

664 A band P passes around the pulley O, over the tension pulleys *p p*, at the outer end of a swiveled and yielding rod, Q, and around a pulley, R, journaled in a stationary segment, S, which is attached to the top of the post I beneath the rake-head. Gearing $r\ r^1\ r^2\ r^3$ transmits motion from the pulley R to the rake-head K, rotating the latter in a horizontal plane.

The segment S is formed with two concentric ranges of cogs S S^1 for elevating the rakes or reel arms, and two concentric ways S^2 S^3 for supporting the same. The shaft M is provided at each end with a cogged segment, *m*, taking with the cogs S, and the shaft M, with a cogged segment, *m*, taking into the cogs S; m^2, are stops upon the shafts M M^1 to limit their rotation; m^4 are arms which pass between guide flanges S^4; m^3 are arms which rest upon the ways S^3 to support the rakes L in their elevated position.

The cutting apparatus is not represented, and may be constructed and operated in any suitable manner.

The operation of the combined reel and rake is as follows:

The rake-head K receives a continuous rotary motion from the belt P, as before explained.

As each reel-arm approaches the rear of the main frame its cogged segment *m* takes into the cogs S, turning the reel-arm backward and upward completely over the frame, and causing the reel-arm which is attached in front to the same shaft M to descend at the side of the wheel, where it operates to present and hold the standing grain to the action of the cutters, and so passes over the platform. By the time the last-mentioned reel-arm reaches the point to be elevated over the frame the first has advanced so far as to pass off the way S^2, and descend clear of the wheel, and so the work progresses. In like manner the rakes L operates first as reel-arms, and passing backward in contact with the platform remove therefrom all the grain that has collected and deposit it on a gavel upon the ground. On passing off the platform the rake is held and guided by its short arm M^4, passing between the flanges S^4, and its cogs M^1 are thereby presented in correct position to the cogs S^1, by means of which it is elevated as above described in reference

665 to the reel-arms. The elevated rake is maintained by the short arm M^3 resting upon the way S^3 until it has passed around sufficiently far to descend clear of the wheel B. The supporting arm M^3 then leaves the way S^3, and the rake is carried down by the ascent of that attached to the opposite end of the shaft M^1.

The present illustration shows two rakes and two plain reel arms. It is obvious that any even number of arms may be employed, and as many may be provided with teeth as preference or the nature of the work may dictate. Two analogous devices have been described for elevating the arms; either of these or any other substantially equivalent device may be adopted, as I do not restrict myself to the specific means described for accomplishing this result.

It will be seen that the platform is so attached and supported as to

permit it to conform with the utmost freedom to inequalities of the surface of the ground, and the standard on post I being rigidly mounted upon the platform, and inclining over the back of the main frame, supports the reel and rake in an unchangeable position in relation to the platform, without obstructing the free motion of the latter in any degree. The spring *q*, bearing against the rear end of the rod Q, maintains the band P at an equal tension in all positions of the pulley R, and the swivel in the said rod permits the band to conform to the changing angle of the pulley as the outer end of the platform rises and falls. The reel and rake can thus operate with complete effect under all circumstances.

Having thus described my invention, what I claim therein as new, and desire to secure by letters patent, is—

1st. A combined reel and rake, rotating upon a vertical axis, and having its arms successively turned up into an inverted position to pass over the main frame, substantially as explained.

2d. The inclined standard I, rigidly mounted upon a loosely hinged platform, and employed to support a revolving reel and rake in an unchangeable position in relation to the said platform without obstructing the free motion of the latter.

666 3d. The yielding and swiveled rod Q operating in combination with the band P and pulleys O and R, in the manner and for the purposes herein shown and explained.

The above specifications of my improvement in reaping-machines signed this twenty-seventh day of February, 1862.

REUBEN HOFFHEINS.

Witnesses:
OCTAVIUS KNIGHT,
JAMES H. GRIDLEY.

[65.]

THE UNITED STATES PATENT OFFICE.

Defendants' extracts. Hoffheins' reissue. No. 2490.

HOFFHEINS ET AL.
vs.
RUSSELL & CO. ET AL.

To all persons to whom these presents shall come, greeting:

This is to certify that the annexed is a true copy from the records of this office of the reissue letters patent granted Reuben Hoffheins, dated February 19th, 1867, No. 2490, for improvement in harvesters.

In testimony whereof I, Ellis Spear, Acting Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this 2d day of February, in the year of our Lord one thousand eight hundred and seventy-six, and of the Independence of the United States the one hundredth.

[SEAL.]

ELLIS SPEAR,
Acting Commissioner.

667 Reissue No. 2490.

The United States of America, to all to whom these letters patent shall come:

Whereas Reuben Hoffheins, of Dover, Pennsylvania, has alleged that he has invented a new and useful improvement in harvesters (for which letters patent were issued to him, dated November 3d, 1863; the same surrendered and new letters issued to him, dated November 7th, 1865, which last letters having been surrendered by him, the same have been canceled and new letters ordered to issue to him on an amended specification), which he states has not been known or used before such invention; has made oath that he is a citizen of the United States; that he does verily believe that he is the original and first inventor or discoverer of the said improvement, and that the same hath not, to the best of his knowledge and belief, been previously known or used; has paid into the Treasury of the United States the sum of thirty dollars, and presented a petition to the Commissioner of Patents praying that a patent may be issued therefor:

These are therefore to grant, according to law, to the said Reuben Hoffheins, his heirs, administrators, or assigns, for the term of seventeen years from the third day of November, one thousand eight hundred and sixty-three, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the schedule hereunto annexed, and made a part of these presents.

In testimony whereof, I have caused these letters to be made patent, and the seal of the Patent Office to be hereunto affixed.

668 Given under my hand at the city of Washington this nineteenth day of February, in the year of our Lord one thousand eight hundred and sixty-seven, and of the Independence of the United States of America the ninety-first.

W. T. OTTO,
Acting Secretary of the Interior.

Countersigned and sealed with the seal of the Patent Office.

[SEAL.]

T. C. THEAKER,
Commissioner of Patents.

UNITED STATES PATENT OFFICE.

Reuben Hoffheins, of Dover, Pennsylvania.—Improvement in harvesters. Specification forming part of letters patent No. 40481, dated November 3d, 1863; reissue No. 2102, dated November 7th, 1865; reissue No. 2490, dated February 19th, 1867.

To all whom it may concern:

Be it known that I, Reuben Hoffheins, of Dover, in the county of York and State of Pennsylvania, have invented a new and useful improvement in combined harvester and rake; and I do hereby declare the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings forming part of this specification, and in which—

Figure 1 is a front perspective view of my improved machine as arranged for cutting grain. Fig. 2 is a rear perspective view of the same in the form of a mower. Fig. 3 is a side view of the same as arranged for transportation. Fig. 4 is a perspective view of the main frame de-

tached. Fig. 5 is a plan of the top of the post on which the rake is mounted.

669 Similar letters of reference in the several figures indicate corresponding parts.

The invention embraced under this patent relates to the mode of combining a raking apparatus with a harvester.

My first improvement consists in the combination, in a two-wheeled hinged-joint machine, of a driver's seat mounted upon the main frame, with a raking mechanism mounted upon the finger-beam, and rotating on a vertical axis, or one nearly so, substantially as hereinafter described, for the purpose of enabling the driver to ride upon the machine while the rake is in operation.

My second improvement consists in the combination, in a two-wheeled machine, of a shoe, with a finger-beam jointed in it, a rake-standard, and platform, with an extension, J^1, and a draft or main frame, which sustains the weight of the cutting apparatus and raking apparatus, with platform attached, at a point between the two drive-wheels.

My third improvement consists in the combination of the jointed finger-beam, inner shoe, and raking apparatus, as hereinafter explained.

My fourth improvement consists in the combination of the revolving or turning rake, extensible tumbling shaft, and driving-shaft of the draft-frame, in the manner hereinafter explained.

To enable others skilled in the art to make and use my invention, I will proceed to describe the construction and operation of the same; but in doing so I wish it to be distinctly understood that I do not confine myself to the construction of the draft-frame, nor to any particular construction of the raking apparatus, but desire to include any style of double-wheeled hinged-joint machine, and any style of revolving rake, in combination with a seat upon the main frame, so long as the principle of operation is substantially the same as hereinafter set forth.

The main frame A A (represented in Fig. 4) is cast in one piece, in the form represented, the ends being left disconnected to facilitate molding and to reduce the weight. B B^1 are two driving or supporting wheels, adapted to turn on the axle C, but each, if desired, furnished

670 with a pawl, *b*, taking into a ratchet, b^1, on the axle, so as to impart rotation thereto when the wheel is turning forward. b^2 is a spring, bearing against the square wheel of the pawl *b*, to hold it either in or out of gear, whichever position it may be set. C^1 is the main gear-wheel on the axle C, which gears with a pinion, *d*, on the transverse shaft D, which carries at its other end a bevel cog-wheel, D^1, gearing with a bevel-pinion, *e*, on the crank-shaft E. E^1 is the crank-wheel, mounted on the rear end of the shaft E, and imparting motion to the cutter F by means of a pitman, *f*, which is provided with a swivel, f^1, formed of a screw-thread and nut, to permit the rolling of the finger-beam without straining or binding the cutter. *a* represents a flange cast upon the main frame for the purpose of imparting additional strength thereto, and also protecting the crank-shaft E. G is the finger-beam, attached at its respective ends to the inner shoe H and the outer shoe or divider H^1. The inner shoe H is pivoted by its centre at *h* to the drag-bar I by a universal joint, and at its respective ends to guides *h* h^1, which work in vertical dovetail slots formed in pendants *i i* on the drag-bar, in such manner as to brace the beam horizontally, while permitting it to turn freely on its axis, either for the purpose of conforming to the undulations of the ground, to rise over obstructions, or to be turned up edgewise and carried on the machine, in manner as represented in Fig. 3, the point of the divider H^1 resting in a staple in the side of the tongue K.

The tongue is attached to the main frame by means of two bolts, k^1, passing through it, and through notches or holes j j or j^1 j^1 at one side of, or near the centre of, the frame, so as to permit the adjustment of the said tongue to a position between the wheels for cutting grain, as illustrated in Fig. 1, or on the outside of the outer wheel, B^1, for cutting grass, as illustrated in Fig. 2. In either position an extension, K, from the tongue affords a means for supporting the inner end of the finger-beam. This is effected in the illustration given in Fig. 1 by a chain, J, rising from the extreme end of a rigid arm, J^1, which projects inward from the finger-beam or platform, and in the illustration shown in Fig. 2 by a chain, J^2, attached at its lower end to a staple, h, in the lateral stay-rod H^2, and at its upper end to a segment-lever, M, fulcrumed at m on the rear end of the tongue, so that by raising the said lever the heel of the beam may be raised to any required height. A rack, M^2, holds the level M in any position in which it may be placed. H^3 represents a track-clearer, pivoted in front to the rear of the divider or outer shoe H^1. On the rear of the inner shoe, H, is formed a lug, h^4, for the attachment of the inner corner of the segmental platform P. The said platform is secured to the finger-beam at suitable intervals by straps O and bolts o^1. N represents a caster-wheel, secured adjustably to the outer edge of the platform, and employed to carry the same at any desired height. Q represents a grain-fender, pivoted in front upon the divider H, and adjustable in height at the rear end by a bolt placed in either of the holes q. On the inner side of the grain-platform, near the heel of the finger-beam, is firmly mounted a post, R, which may incline over toward the main frame, as shown in Fig. 1. The said post is braced by stay-rods r r r, the respective lower ends of which may be bolted to the platform, the front of the shoe H, and the outer end of the rigid arm J^1, so as to secure the post in rigid connection with the platform, and cause it to follow all the motions of the latter. The post R is provided at its upper end with a cogged segment, S, and a segmental guide-way, S^1 (see Fig. 5), by which the revolving rakes are turned and held in the required positions, as will be presently explained. T is an inverted crown-wheel, provided with a vertical shaft, which is journaled in a box on the upper part of the post R. Rotation is communicated to the crown-wheel T, an extensible tumbling-shaft, U U, of square form, made in two parts, sliding one within the other, so as to assume any length which the positions of the parts may require, and work equally well in any position. The said extensible tumbling-shaft is connected at its respective ends by universal joints to pinions u^1 u^2, the first, u^1, mounted upon the main frame, and gearing with a pinion, u^3, on the axle C, and the second, u^2, mounted on the post R, and gearing with the crown-wheel T. The rake or reel arms V V^1 are mounted in pairs upon the ends of horizontal shafts v v^1, journaled at right angles across the top or back of the inverted crown-
672 wheel T. The rake-arms form an angle with the shaft v, the inclinations of one arm of each pair being just in a converse direction of the other, so that when one rake or reel arm is over and down close to the platform the other will be at a very high position on the inner side of the machine. By this means the rake and reel-arms will stand high enough above the draft-frame, on the inner side of the machine, to move clear of the driver, who sits upon the machine in a seat, W, which is mounted upon the main frame, as shown, or in any other position on the frame that will give the greatest convenience and advantage from his weight and use of his hands in the management of the machine. At the junction of each of the rake or reel arms with the

shafts v v^1 is secured a cog-segment, v^2, adapted to gear with the fixed cogged segment S, and in passing over the same to turn the reel or rake on that side of its inverted and elevated position, in which position it is held during about one-fourth of its revolution by a rigid arm, v^3, resting on the segmental guide-way S^1; and it will be apparent that the corresponding reel or rake arm, being rigidly secured to the opposite end of the same shaft, will be held in its lower or working position during the same period.

From the foregoing description it will be seen that my invention enables me to combine in a self-raking harvester all the advantages derived from the two-wheeled hinged-joint machine, and still use a rake that turns about an axis, or revolves entirely around the same, and at the same time have the driver or manager ride upon the main or draft frame in such a position that his weight may aid in counter-balancing the weight of the rake and platform, and his hands may be conveniently employed for controlling the machine. The use of the rigid arm J^1, projecting from the finger-beam or platform, and supporting the finger-beam, platform, and rake from the rear of the tongue at a point between the drive-wheels, diminishes the abruptness of the motions of the cutting apparatus, platform, and rake without restricting their freedom in conforming to undulations of the ground. This is the result while cutting grain with the machine, as shown in Fig. 1. The peculiar
673 devices for transmitting motion to the rake adapt it to act equally well at any height or angle of the platform. The peculiar construction and attachment of the inner shoe adapt the finger-beam to roll freely on its axis in use, or to be turned over on its edge, and folded compactly against the frame, as illustrated in Fig. 3, to adapt the machine to be moved from place to place. The pawl or ratchet connection between the driving-wheels and their axle adapts the machine to be turned or backed with perfect freedom, and also affords ready means for throwing the entire machinery out of gear, which is effected by raising the pawls out of the ratchets, where they will be held by the springs b^2. I would here remark that any well-known style of two-wheeled draft-frame adapted to the purpose herein set forth may be used.

The operation is as follows: For cutting grain the parts are arranged as shown in Fig. 1. The successive rake and reel-arms, descending (as the machine moves forward,) in front of the finger-beam, deflect the grain backward toward the cutters in the customary manner, and the rakes remove the cut grain in compact gavels from the platform, and deposit it out of the return path of the horses. In mowing, the platform and reel are removed, and the cutter is left perfectly free, being suspended on a chain, by which it is raised and lowered through a lever, as before explained, the tongue being transferred to a position on the outside of the wheel B^1, for the purpose of making the machine operate as a mower to better advantage. The cutting apparatus may be thrown out of gear by moving the traverse shaft D longitudinally by lever D^2, and providing it with a pin, d^2, which, in one position of the shaft, will fit a recess in the hub of the wheel, so as to impart rotation thereto, and in the other position will permit the shaft to turn independently of the wheel. This lever may be moved by the hand or foot of the driver.

Having thus described my invention, what I claim as new under this patent is:

I. The combination, in a two-wheeled hinged-joint machine, of a driver's seat mounted upon the main frame, with a raking mech-

674 anism mounted upon the finger-beam, and rotating around a vertical axis, or one nearly so, substantially in the manner described, for the purpose of enabling the driver to ride on the machine while the rake is in operation.

2. The combination, in a two-wheeled hinged-joint machine, of a shoe, with a hinged joint in it, with a rake and platform, having an extension, J^2, and with a draft-frame, which sustains the weight of the cutting apparatus and raking apparatus with platform attached at a point between the two drive-wheels.

3. The combination with the hinged-jointed machine of the inner shoe and raking apparatus, substantially as described.

4. The combination of a revolving or turning-rake, extensible tumbling-shaft, and driving-shaft or axle of the main frame, substantially as described.

5. The combination of a two-wheeled hinged-joint machine, a revolving raking apparatus, and a driver's seat mounted on the main frame, substantially as described, and for the purpose set forth.

6. I claim driving a revolving rake, or a combined revolving rake and reel, which moved about vertical, or nearly vertical, axis, by a device arranged on the grain side of the inner drive-wheel or inner side of the draft-frame.

7. Making a direct driving connection between a revolving rake, or a combined rake and reel, which move about a vertical, or nearly vertical, axis, and the inner end of the main-frame axle of the draft-frame.

8. Employing a tumbling-shaft on the inner side of the draft-frame for driving a revolving rake, or a revolving rake and reel, which is mounted on a hinged finger-beam or upon the platform.

9. The combination of a quadrant platform, hinged finger-beam, revolving rake, and a driver's seat supported by the main frame.

R. HOFFHEINS.

Witnesses:
R. T. CAMPBELL.
EDW. SCHAFER.

675 *Defendants' Exhibit, Hoffheins' Patent*, 40481. *Nov. 3d*, 1863.

To all who it may concern:

Be it known that I, Reuben Hoffheins, of Dover, in the county of York and State of Pennsylvania, have invented certain new and useful improvements in harvesters; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings (making part of this specification), in which—

Figure 1 is a front perspective view of my improved machine, as arranged for cutting grain.

Figure 2 is a rear perspective view of the form of a mower.

Figure 3 is a side elevation of the same, as arranged for transportation.

Figure 4 is a perspective view of the main frame detached.

Figure 5 is a plan of the top of the post on which the rake is mounted.

Similar letters of reference indicate corresponding parts in the several views.

My present improvements consist—

1st. In a peculiar construction and combination of frame gearing and double driving-wheels, for purposes hereinafter explained.

2d. In a device for affording protection to the main crank shaft and strengthening the main frame.

3d. In the use of a movable tongue, which may be secured in various positions to adapt it for various uses of the machine.

4th. In a device for permitting the finger-beam to turn freely on its own axis.

In order that others skilled in the art to which my invention appertains may be enabled to fully understand and use the same, I will proceed to describe its construction and operation.

676 The main frame A A is cast in one piece in the form represented in figure 4, the ends being left disconnected to facilitate casting and to reduce the weight. B B^1 are two driving-wheels adapted to turn on the axle C, but each furnished with a pawl, h^1, on the axle, so as to impart rotation thereto when the wheel is turning forward. h^2 represents a spring bearing against the square heel of the pawl *H*, to hold it either in or out of gear, in whichever position it may be set. C^1 is the main gear-wheel on the axle C, which gears with a pinion, *d*, on the transverse shaft D, which carries at its other end a bevel cog-wheel D^1, gearing with a bevel pinion, *e*, on the crank shafts E. E^1 is the crank-wheel, mounted on the rear end of the shaft E, and imparting motion to the cutter F by means of a pitman, *f*, which is provided with a swivel, f^1, formed of a screw thread and nut to permit the rolling of the finger-beam without straining or binding the cutter. *a* represents a flange cast upon the main frame for the purpose of imparting additional strength thereto, and also protecting the crank shaft E.

G is the finger-beam attached at its respective ends to the inner shoe H and the outer shoe or divider H^1. The inner shoe H is pivoted by its centre at *h* to the drag-bar I by a universal joint, and at its respective ends to guides h^1 h^1, which works in vertical dovetail slots formed in pendants *i i* on the drag-bar in such a manner as to brace the beam horizontally while permitting it to turn freely on its axis, either for the purpose of conforming to the undulations of the ground, to rise over an obstruction, or to be turned up edgewise and carried on the machine in manner represented in Fig. 3, the point of the divider H^1 resting in a staple, *k*, in the side of the tongue K. The tongue is attached to the main frame by means of two bolts, k^1, passing through it and through notches or holes *j j*, or j^1 j^1, at one side of or near the centre of the frame, so as to permit the adjustment of the said tongue to a position between the wheels for cutting grain, as illustrated in Fig. 1, or on the outside for cutting grass, as illustrated in Fig. 2.

677 In either position an extension, K^1, from the tongue affords means for supporting the inner end of the finger-beam. This is effectd in the illustration given in Fig. 1 by a chain, J, rising from the outer end of a rigid arm, J^1, which projects inward from the beam, and in the illustration shown in Fig. 2 by a chain, J^2, attached at its lower end to a staple, h^2, in the lateral stay-rod H^2, and at its upper end to a segment lever, M, fulcrumed at *m* on the rear end of the tongue, so that by raising the said lever the heel of the beam may be raised to any required height. A rack, M^1, holds the lever M in any position in which it may be placed.

H^3 represents a track-clearer pivoted in front to the rear of the divider or outer shoe H^1. On the rear end of the inner shoe is formed a lug, h^4, for the attachment of the inner side of the segmental grain platform P. The said platform is secured to finger beam at suitable intervals by straps, O, and bolts, o^1. N represents a caster-wheel

secured adjustably to the outer edge of the platform, and employed to carry the same at any desired height. O represents a grain fender of sheet iron pivoted in front upon the cast-iron divider H^1, and adjustable in height at its rear end by a bolt placed in either of the holes *q*. On the inner side of the grain platform, near the heel of the finger-beam, is firmly mounted a post, R, which may incline over toward the main frame, as shown in Figure 1. The said post is braced by slag rods *r r r*, the respective lower ends of which may be bolted to the platform, the front of the shoe H, and the outer end of the rigid arm J^1, so as to secure the post in rigid connection with the platform, and cause it to follow all the motions of the latter. The post R is provided at its upper end with a cogged segment, S, and a segmental guide-way, S^1 (see figure 5), by which the revolving rakes are turned and held in the required positions, as will be presently explained. T is an inverted crown-wheel provided with a vertical shaft, which is journaled in a box on the upper part of the post R. Rotation is communicated to the crown-wheel T by an extensible tumbling shaft, V V^1, of square form, made in two parts, sliding one within the other, so as to assume any length which the positions of the parts may require, and work equally well in any position.

678 The said extensible tumbling-shaft is connected at its respective ends by universal joints to pinions u^1 u^2, the first (u^1) mounted upon the main frame and gearing with a pinion, u^3, on the axle C, and the second (u^2) mounted on the post R and gearing with the crown-wheel T.

The rake or reel arms V V^1 are mounted in pairs upon the ends of horizontal shafts, *v*, v^1, journaled at right angles across the top or back of the inverted crown-wheel T. At the junction of each of the rake or reel arms with the shafts *v* v^1 is secured a cogged segment, v^2, adapted to gear with the fixed cogged segment S, and in passing over the same to turn the reel or rake on that side to its inverted and elevated position, in which position it is held during about one-fourth of its revolution by a rigid arm, v^3, resting on the segmental guide-way S^1, and it will be apparent that the corresponding reel or rake arm being rigidly secured to the opposite end of the same shaft will be held in its lower or working position during the same period.

W represents the driver's seat.

Operation:

For cutting grain the parts are arranged as shown in figure 1; the successive rake and reel arms descending in front of the finger-beam deflect the grain backward toward the cutters in customary manner, and the rakes remove the cut grain in compact gavels from the platform.

The use of the rigid arm J^1 projecting inward from the finger-beam and supporting the latter and the attached platform from the rear of the tongue diminishes the abruptness of the motions of the cutting apparatus and platform without restricting their freedom in conforming to undulations of the ground.

The peculiar devices for transmitting motion to the rake adapt it to act equally well at any height or angle of the platform.

In mowing the cutters are left perfectly free, but may be raised or lowered by the operator in the manner already explained, the tongue K being transferred to a position on the outside of wheel B^1. The peculiar construction and attachment of the inner shoe adapt the finger-beam to roll freely on its axis in use, or to be turned over on its edge and folded compactly against the frame, as illustrated in figure 3, to adapt the machine to be moved from place to place.

679 The pawl or ratchet connection between the driving-wheels and

their axle adapt to the machine to be turned or backed with perfect freedom and also afford ready means for throwing the entire machinery out of gear, which is effected by raising the pawls out of the ratchets where they will be held by the springs b^2.

The cutting apparatus may be thrown out of gear by moving the transverse shaft D longitudinally by a lever, D^2, and providing it with a pin, j^2, which in one position of the shaft will fit in a recess in the hub of the wheel so as to impart rotation thereto, and in the other positions will permit the shaft to turn independently of the wheel. This lever may be moved by the hand or foot of the driver.

Having thus described my invention, what I claim as new therein, and desire to secure by letters patent, is—

1st. The main frame and gear frame A A, constructed as described, open at each end, when used in combination with shafts, gearing, and double driving-wheels arranged and operating substantially as and for the purposes specified.

2d. The flange *a* cast or formed upon the gear frame for the combined purposes of strengthening the latter and protecting the crank-shaft E, as hereinbefore explained.

3d. The movable tongues K, adapted to be attached to the frame on either side of the wheel B^1, and employed to support or raise the inner end of the beam.

4th. Attaching the shoe to the drag-bar by a transverse swivel-joint to permit the finger-beam to turn its axis to elevate or depress the joints of the fingers, or to fold the beam against the frame for transportation when combined with bracing guides h^1 substantially as herein described.

REUBEN HOFFHEINS.

Witnesses:
OCTAVIUS KNIGHT.
CHARLES SMITH.

680 *Defendants' Exhibit, Lewis C. Reese Patent, April 10th*, 1860, *No.* 27832. *Certificate. Petition.*

To all whom it may concern:

Be it known that I, Lewis C. Reese, in Philipsburg, Warren County, State of New Jersey, have invented a new and useful improvement in grain and grass harvester, the same being a combined rake and reel, and I do hereby declare the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making part of the specification, in which

Fig. 1 is a vertical section of my invention, taken in the lever XX, figure 2.

Fig. 2, a plain or top view of ditto.

Similar letters of reference indicate corresponding parts in both figures.

This invention consists in the employment or use of a series of arms constructed each with a swivel and connected to a rotary shaft by means of joints, the above parts being used in connection with a curved guide and retaining arms, all the parts being so arranged as to cause the arms, as their shaft is rotated, to pass over the platform, and in such a relative position therewith and with the sickle as to perform the functions of a reel and raking device.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents a portion of the main frame of a harvester, and B a

platform attached thereto; C is an upright, being slotted vertically, and having a bearing, D, attached to it by a screw-bolt, *a*, which passes through the slot in the upright, and through the bearing, and admits of a vertical adjustment of the latter; E is a shaft which is fitted
681 into the bearing D, and is allowed to rotate freely therein; to one end of this shaft E, four radical arms, F, are attached, each arm being slotted longitudinally and curved slightly towards the opposite end of its shaft E, as shown clearly in figure 2; on the shaft E a hub or boss, *b*, is placed, and to this hub or boss four arms, G, are attached by joints, C; each arm G is also constructed with a swivel, *a*, to admit of rotation of their outer parts, *e*, independently of their inner parts, *f*; the swivel *d* is shown clearly in both figures, and constructed similarly to the ordinary swivels used for analogous purposes.

H represents a curved guide, which may be formed of a flat metal bar, bent in elliptical form, and at the same time forming a transverse section of a flattened cone, or the bar may be described as being bent in elliptical and flaring form. The shape of this guide is shown clearly in figures 1 and 2. The guide is attached to the main frame A by supports, *g g*.

The arms G are connected to the guide H by friction rollers, *h*. These frictions are at the ends of rods, *i*, attached to slats, *j*, secured to the outer parts, *e*, of the arms G. There are four rods, *i*, to each plate, *j*, and two of the rods of each plate are at the outer and two at the inner side of the guide, and consequently each arm G has four friction rollers that bear on the guide. To the end of each arm G an oblique bar, I, is attached, and the arms G are fitted in the slots of the arms F, one in each; the arms F retain the arms G in proper relative position with each other. To one of the bars I teeth are attached, forming a rake, I.

The operation is as follows: The shaft F is rotated from any of the working parts of the device, and as said shaft rotates the arms G are carried around on the guide H, and descend just in front of the sickle, at the front end of the platform, and traverse back over the platform, the rake I raking the cut grain therefrom and the bars I performing, just before passing on the platform, the functions of the beaters of a reel, viz, presenting the grain properly to the action of the cutters. The arms G and their rake-heads rise at the back end of the platform and pass, in an elevated position, towards the front part, when they descend and again pass over the platform, the outer parts, *e*, of
682 the arms G turning as they pass around on the guide H, owing to the swivels *d*, the bars turning down in a working position as they descend in front of the platform, and turning up as they pass upward at the back of the platform. The slotted arm F and joints *c* admit of the arms G, as they rotate, working in and out, under the influence of the guide H and the arms F, keep the arms G in a proper relative position with each other. The rake I° and the bars I may be made to work nearer to or further from the platform B by adjusting the bearing D, and the several arms G are so arranged that they follow each other successively a trifle nearer the platform at every revolution of the shaft E, so that the bars I will not interfere with the cut grain on the platform. For instance, the first bar I, succeeding the rake I', in practice, is made to pass over the platform within eight inches of its surface, and the succeeding bar about 9½ inches, the next succeeding bar about 11 inches, and the rake then follows close to the platform and draws or rakes all the cut grain therefrom to the rear and off from the platform, behind the main frame.

Having thus described my invention, what I claim as new, and desire to secure by letters patent, is:

1. The combination of the arms G, provided respectively with bars I, and one or more rakes I^1, with swivels *d*, connected by joints *c*, to a rotating shaft E, and by friction rollers, or other suitable means to a guide H, to operate as set forth.

2. The employment or use in connection with the guide H of slotted arms F attached to the shaft E, and arranged as described to receive the arms G and retain the same in a proper relative position with each other, and arranged for adjustment substantially as described.

LEWIS C. REESE.

Witnesses:
A. R. REESE.
F. B. DAYTON.

(Filed March 7th, 1860. H. G.)

683 *Defendants' Exhibit, Brown Patent.*

No. 32556, June 18th, 1861. Improvement in harvesters. Certificate. Petition. Specification.

To all whom it may concern:

Be it known that I, Robert Brown, of Frederick, in the county of Frederick and State of Maryland, have invented certain new and useful improvements in harvesting machines, and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings making part of this specification, in which—

Figure 1 is a rear view of the grain harvester embodying my improvement.

Figure 2 is a plan of the machine as adapted for mowing.

Figure 3 is a section at 1 1, figure 2.

Figure 4 is a perspective view, exhibiting the manner of attaching an additional number of reel-arms.

Figure 5 is a perspective view of one of the pinions hereinafter described.

Similar letters of reference indicate corresponding parts in the several figures.

684 The nature of my invention consists:

First. In an improved manner of mounting and attaching rake and finger-bar.

Second. In an improved combination of devices for attaching the reel or rake to adapt it for any desired number of arms.

A A are the driving-wheels, carrying cogged rings B, which gear with pinions C, journaled loosely upon the shaft D, so as to impart motion thereto only when the machine is moving forward, and when placed in gear as hereinafter explained. Reciprocating motion is thence communicated to the cutter E, through the medium of bevel-gears F G, shaft H, crank-wheel I, and connecting rod J, in customary manner. The finger-bar K is mounted upon a hollow or divided shaft L, the journals *l* of which surround the journals *h* of the shaft H, and work in boxes M, secured to the main frame of the machine.

The vertical shaft of the reel is journaled in a frame N, bolted to flanges l', projected upward from the shaft L. The arms N of the reel, which rest upon a ring O, are rotated through the medium of pinion P, crown-wheel Q, and shaft R, in customary manner.

By this means the reel is made to follow the rising and falling of the finger-bar, and both may assume any position required by inequalities in the surface of the ground without interfering with the working of the cutter.

When a four-armed reel is employed one arm is provided with a rake-head as shown in Fig. 1. In this arrangement each pair of arms is mounted upon a metal ring *n*, encircling the shaft R, and secured thereto by a bolt as represented.

When six arms are required the ring N′, of the centre pair, is constructed with bolt-holes, 2 2, set obliquely to the arms, and a bridge, N^2, perforated for the attachment of an arched yoke, N^3, to which the upper pair of arms is secured, as shown clearly in Fig. 4. By this
685 means a reel of either two, four, or six arms may be used, the arms in either case being equidistant and adapted to revolve in one plane. In a six-armed reel two are usually provided with rake-heads.

The pinions C have a limited play longitudinally upon the shaft D, and are, while the machine is in operation, pressed outward for springs S S, acting through the medium of clutch-bars T T, fulcrumed at *t t* to the main frame of the machine. In this position the pinions rotate the shaft during the forward motion of the machine, by means of ratchet-teeth or grooves on their outer faces engaging with pinions *d* on the shaft, but in backing the machine the oblique backs of the teeth, slipping past the pins *d*, impart no motion to the shaft. V V are clutch-rods operated by a lever, V, to throw the cutting mechanism out of gear when desired by withdrawing the pinions C from contact with pins *d*. To permit this action without preventing the automatic motion of the pinions upon the shaft, as previously explained, the rods U connect with the levers T by elongated slots, as seen at *u*, in Fig. 2, thus enabling the levers to move independently of the rods.

The construction of the finger-bar is exhibited in Fig. 3. K^1 is a rebate in front, on the under side of the bar, to afford secure attachment and support for the fingers K^1. K^2 is a rebate at back on the upper side of the bar to receive the platform K^3 without causing it to project above the top of the bar, and when the platform is removed for mowing to allow the grass to fall with greater freedom.

W is the gatherer (represented by red lines in Fig. 2). It consists of a bar pivoted at *w* to the frame of the machine, and adjustable at any desired angle to deflect the grain toward the cutter. X is a lever fulcrumed at *x* to the frame of the machine, and connected with the finger-bar by a link, Z. Y is a top against which the lever rests when not held by the operator.

The operation of the machine may be understood from the foregoing description of its construction. Parts not specifically described may be constructed in any suitable manner.

686 I am aware that it is common to journal shafts within sleeves for various purposes, and also that the finger-bar in harvesting machines has been hung upon the crank-shaft. In my machine the finger-bar is not hung upon the crank-shaft, but secured to an independent hollow shaft, which is journaled in stationary bearings on the main frame of the machine, and to which shaft the frame supporting the reel is also rigidly secured. The crank-shaft is journaled with the journals of the said hollow shaft, so that a strain upon the latter occurring through the finger-bar will not affect the crank-shaft.

By securing the reel standards upon the shaft of the finger-bar without any (attachment) connection directly with the main frame, and

transmitting motion in the manner hereinbefore explained, the reel is made to work equally well and at equal speed in any position of the bar, and may be removed with great facility to change the machine from a reaper to a mower.

What I claim as new; and desire to secure by letters patent, is:

First. Securing both the finger-bar and the rake-frame to a hollow shaft, L, the journals (*l*) of which run in bearings, M, in the main frame and themselves constitute bearings for the journals (*h*) of the crank-shaft, all as herein shown and explained, and for the purposes set forth.

Second. The reel attachments n n^1 n^2 n^3, constructed, combined, and arranged in the manner specified, to enable the attachment of any desired number of arms.

ROBERT BROWN.

Witnesses:
A. L. EADER.
MARCELLUS DORSEY.

687 *Defendants' Exhibit, Aultman Patent, No.* 24700, 1859.

Lewis Miller and Jacob Miller, assignors to C. Aultman & Co. No. 24700. July 5th, 1859. Improvement in harvesters. Certificate. Petition. Specification.

To all whom it may concern:

Be it known that we, Lewis Miller and Jacob Miller, of Canton, in the county of Stark and State of Ohio, have invented certain new and useful improvements in harvesting machines; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents, in perspective, a portion of a harvesting machine sufficient to illustrate the character of our invention, and

Figure 2 represents a vertical section taken through the cutter-bar and main frame in a line with it, as also through the hinged bar by which they are connected.

Similar letters of reference, where they occur in the separate figures, denote like parts of the machine in both of them.

In the construction of grain and grass harvesters upon the plan invented by us, and in which the finger-beam and platform have heretofore been hinged to the main frame, no proper provision was made for controlling said finger-beam or platform, and at the same time relieve them from the rising and other motions of the main frame.

688 To simply hinge the finger-beam and platform leaves them entirely too uncontrollable.

To suspend them to the main frame, in addition to the hinge connection, causes them to receive all the rising or rolling motion of said main frame. We have discovered the evil consequences of both these plans and devised means for obviating the latter objection, whilst we still hinge the finger-beam and platform to the main frame, or, in other words, we retain all the advantages of a hinged connection between the finger-beam and platform when used, whilst we have greater control over the hinged joint, and avoid transmitting the motions of the main frame to said finger-beam or platform.

And the nature of our invention consists in suspending a finger-beam or platform that is hinged to the main frame to the hinged arms by

which they are connected to the said main frame, and not to the main frame itself, by which means all the advantages of the hinged joint and the proper bracing may be attained without transmitting the motions of the main frame to said finger-beam or platform.

To enable others skilled in the art to make and use our invention, we will proceed to describe the same with reference to the drawings.

A represents the main frame, supported upon the carrying and driving wheels B.

Underneath the front part of the main frame is a bracket or hanger, *c*, to which one end of the brace or bar D is hinged, as at *a*, the other end of said brace or bar being hinged at *b* to the platform or finger-beam, or to a plate that is attached to or unites them.

The bar D is strengthened by a transverse brace, E, that is rigidly bolted to said bar D, and extending back is pivoted to the rear of the machine, as at *e*, so that it will allow said bar to freely work on its hinged point *a*. The rear of the platform may be similarly hinged to the main frame, as its front is, viz, by a bar, F, which may be of wood, however, whilst that in front (D) should be of metal, said bar be-
689 ing hinged at *d* to the main frame, and at *e* to the platform or platform-bar A. H may represent the finger-beam, or it may be a separate beam, to which the platform is united or on which it is supported.

This beam or bar H, as well as the bar A, projects beyond the inside edge I of the platform far enough to receive a suspension bolt, *f f*, (one in each), which bolts suspend said bars to the hinged pieces D, F, and thus allow the inner edge of the platform to rise or yield upward to a given extent (which may be adjusted or regulated by the nuts on the suspension bolts), but which prevent said inner edge of the platform from dropping below a given line, and thus, whilst the main frame and the platform may freely move on the hinged or pivoted points *a d*, there is provision for a rising motion along the inner line of the platform, which can take place without in anywise affecting or being affected by the rising of the outer part of the platform or of the main frame, and thus, if the inside shoe or divider should pass over any obstacle, the platform and braces will admit of rising to yield to such obstacle without affecting the main frame or outer portion of said platform. If the braces D F were suspended to the main frame A, as in some of our former machines, it is obvious that the rising of the main frame must lift up said braces, and they would carry up the platform, or cutter, and thus if the most remote wheel should drop into a hole and throw up the main frame, this shock or rising up would be communicated through the hinged arms or braces to the cutters or platform; but by suspending the platform, or its bars or beams, to the hinged arms D F, as shown, no such dropping of a wheel would affect the platform or cutters, as the frame would simply rock on the joints *a d*, and the motion be confined to itself.

The platform has an outside supporting-wheel, J, which may be adjustable so as to lower or raise the outer end of the platform.

But when the machine is to be used as a mower the platform
690 and outer wheel are removed. The rear hinged arm, F, may also be removed, as it is not used when the machine is converted into a mower.

g is a brace, designed for bracing in the inside shoe or divider.

The tongue K is pivoted at its heel to the frame *h*, being the pivoting bolt. *i* is an "r" shaped lever, one arm of which is bolted to the tongue at *n*. Another arm receives the bolt *h* through it, and to the

third arm, *m*, is attached a connecting-rod, *t*, which extending rearward is attached to a lever, *s*, by which the main frame can be raised or lowered, and held, when at the proper height, by a tooth or projection on said lever, taking into one of the notches in the catchpiece *t*. The tongue is braced by a brace, *u*, fastened to it, and pivoted at *v* to the main frame.

Having thus fully described the nature and object of our invention, we would state that we are aware a knuckle has heretofore been used for regulating the extent of motion between the finger-bar and the yielding hinged bar, having so used one ourselves; to this we lay no claim in this application; but what we do claim is extending the finger or platform bar, one or both, far enough under the yielding bars, by which they are hung to the main frame, as that the two may be united by suspension-rods, which allows them a yielding motion in one direction, makes them rigid in another direction, and prevents the motions of the main frame from being communicated to the finger-bar, substantially as described.

JACOB MILLER.
LEWIS MILLER.

Witnesses:
S. HANKER.
PETER S. TRUMP.

691 *Defendants' Exhibit, Gronberg Patent, No. 24555, dated June 28, 1859. Certificate. Petition. Specification.*

To all whom it may concern:

Be it known that I, C. P. Gronberg, of Montgomery, in the county of Kane and State of Illinois, have invented a new and improved raking attachment for harvesters; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Fig. 1 is a side view of my invention.

Fig. 2, a plan or top view of ditto.

Figs. 3 and 4, detached sectional views in perspective, showing the manner of raising and releasing the rake.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to an improvement in that class of raking devices in which a vibrating rake is employed and made to traverse over a sector or quadrant-shaped platform. The invention consists in a novel means employed for operating the rake, as hereinafter fully shown and described, whereby the desired end is attained by a very simple means, and that one may be readily applied or adapted to the generality of harvesters in use.

To enable others skilled in the art to fully understand and construct my invention, I will proceed to describe it.

692 A represents the platform of a harvester of sector or quadrant form, and attached to the framing B of the machine in any proper manner. To the framing B, and at a point near the inner end of the front side of the platform, an elevated semicircular bar, C, is placed, which bar serves as a rest for a rock-bar, D, that receives a reciprocating motion from a crank, E, the pin *a* of which works between pendants *b b* attached to said bar D. (See more particularly Fig. 1.)

The rack *c* of the bar D gears into a semicircular tooth bar, *d*, which

is attached to the upper part of a skeleton hub, *e*, the axis of which is at the bottom of the center of the support *e'* of the semicircular bar C.

In the skeleton hub *e*, the inner end of a shaft, F, is bent, forming a sort of crank, as shown plainly in Fig. 1, and to its outer part a rake, G, is attached, said rake being constructed in the usual or any proper way.

On the inner part of the shaft F a spiral spring, *h*, is placed, which spring has a tendency to keep the outer portion of the shaft in a horizontal plane with the inner portion, and the rake G down on or near to the platform A.

On the inner end of the shaft F a roller, *i*, is placed loosely, and bears against the under side of the semicircular bar C. On said shaft F, and adjoining the roller *i*, a part-pinion, G', is placed loosely, and to the lower part of the support *e'* of the bar C a horizontal semicircular bar, *j*, is attached, said bar being directly under and in the path of the loose part-pinion G'. The upper surface of this bar *j* is smooth nearly its whole length, a few teeth or cogs, *k*, being at its front end, as shown in figures 1 and 3.

To one side of the part-pinion G' a spring-catch, *l*, is attached, the form of which is shown plainly in figures 2 and 3, and to the inner part of the shaft F a projecting arm, *m'*, is attached.

To the support *e'*, and near the end of the semicircular bar *j*, which is opposite to the end where the teeth or cogs *k* are placed, there is secured a projection, *n*, (see figures 2 and 4,) the use of which will be presently seen.

To the lower part of the skeleton hub *e* a projecting arm, *o*, is
693 secured, said arm serving as a bearing for the shaft F, when the rack G is depressed or in a position to rake off the platform A.

The operation is as follows:

As the machine is drawn along, a rotary motion is communicated to the crank E from the driving-wheel of the machine, and said crank E communicates a reciprocating motion to the rack-bar D, and the latter, in connection with the semicircular toothed bar *d*, gives a vibrating motion to the shaft F and rake G, the latter moving or traversing over the shaft-arm A.

Each time the rake G reaches the termination of its backward movement, or rather just previous to said termination, the part-pinion G' is brought into gear with the teeth or cogs *k* of the semicircular bar *j*, and the part-pinion G' is turned so that its spring-catch *l* will catch the end of the arm *m* on the shaft F, as shown in figures 2 and 3, and as the shaft F commences to move forward or toward the front end of the platform, the shaft F, in consequence of the part-pinion G' gearing into the teeth or cogs *k*, and the connection of said part-pinion with the shaft F, by means of the spring-catch *l* and arm *m*, said shaft F is turned, and the rake G elevated and retained in an elevated position as it is moved over the platform, until it reaches a point over the front part of the platform, at which time the spring-catch *l* is thrown off the arm *m* in consequence of said arm coming in contact with the projecting arm *n* on the semicircular bar *j*, and the rake G falls by the action of the spring *h*, so that during the backward movement of the rake the cut grain will be raked from the platform.

I do not claim a vibrating rake broadly, nor the devices employed for operating the same, but I do claim as new, and desire to secure by letters patent, the peculiar arrangement of the mechanism, namely, the reciprocating rack-bar *d*, in connection with the bent rake-shaft E, provided with a spring, *h*, arm, *m*, and part-pinion, G', and the semi-

694 circular bar, *j*, on the support, *e'*, provided with teeth, *k*, and a projecting arm, *n*, for joint operation, substantially as and for the purpose set forth.

C. P. GRONBERG.

Witnesses:
RALPH GRAY.
VIN. A. WATKINS.

Defendants' Exhibit, Isaac C. Twining.

Patent No. 29640, dated August 14th, 1860. Certificate. Petition. Specification.

To all whom it may concern:

Be it known that I, Isaac C. Twining, of Wrightstown, in the county of Bucks and State of Pennsylvania, have invented a new and improved raking device for harvesters, and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings making a part of this specification, in which—

Fig. 1 is a side sectional view of a harvester, with my invention applied to it.

Fig. 2, a back sectional view of ditto, taken in the line *y-y*, figure 1.

Fig. 3, a plan or top view of ditto.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to an improvement in that class of raking device in which a vibrating rake is employed and arranged to sweep over the platform in the arc of a circle.

695 The within-described invention consists in a novel and improved means for operating the rake, substantially as hereinafter shown and described, whereby the two movements necessary to be given to the rake, to wit, the vibrating, and the rising and falling one, may be obtained in a very simple and economical way, and the rake may be operated intermittingly when necessary.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it:

A represents the main frame of a harvester, and B the platform; C is the driving or ground wheel, and D a caster-wheel which supports the front end of a plank, on which the driver's seat is placed, the back end of said plank being attached to the main frame A.

The sickle E, which may be of the usual reciprocating kind, is attached to the front end of the platform, which is curved at its outer side to correspond with the arc described by the rake in its movement.

The above parts may all be constructed and arranged in the usual way, and therefore do not require a minute description.

On the axle F, of the wheel C, there is placed a wheel, G, having a portion or section of its periphery toothed, as shown at *a*. On the axle F there is also placed a cam, H, and a wheel, I; the latter having only a portion or section of its periphery toothed, as shown at *b*, the wheel is allowed to slide on the axle F, but is connected to it by a feather and groove, so as to turn with the axle. Between the wheel I and the cam H there is placed a spiral spring, *c*, which has a tendency to keep the wheel I off from the cam H. On the inner end of the axle F there is placed a pinion, *d*, into which a pinion, *e*, on a shaft, *f*, gears. To the outer side of the pinion *e* there is attached a cam, *g*, against which a lever,

A′, is pressed by the spiral spring *c*, the back end of said lever being attached to the back part of the main frame A. The front end
696 of the lever A′ is forked, and is fitted on the axle F, and has the wheel I pressed against it by the spiral spring *c*. (See figures 2 and 3.)

In the main frame A there is placed a vertical shaft, J, on which there is a wheel K, having two sections or portions, *h h*, of its periphery toothed, said toothed portion being at opposite sides of the wheel, as shown in figure 3. To the under surface of the wheel K there is attached by a joint, *i*, a rake-bar, L. The joint *i* admits of the bar L rising and falling in a vertical plane, and said joint being near the periphery of the wheel, K, the latter serves as a crank for the rake-bar, as will be presently described.

The inner end of the rake-bar has a metal link or strap, a^x, attached, through which the shaft J passes. The outer end of the bar L has a rake, M, attached, the length of which is equal to the width of the platform B. On the vertical shaft J there is placed a bent sliding-bar, O, the lower part of which rests on the cam H, the upper part sustaining the rake-bar L. The operation is as follows: As the machine is drawn along the toothed portions *a b* of the wheels A I gear alternately with the wheel K, and give a vibrating motion to the rake-bar L and rake M, the wheel I moving the rake forward to the front end of the platform, and the wheel N moving it backward.

Previous to each forward movement of the rake, the cam H elevates the rake-bar, and retains it in an elevated position while it is moving forward, the cam allowing the rake to fall at the termination of its forward stroke or movement; as the rake moves backward it is in contact with the platform, and the cut-grain is raked therefrom; as the rake reaches the termination of its backward movement, the bar L is elevated, preparatory to its forward movement by the action of the cam H on bar O. The forward movement of the rake does not always take place immediately at the termination of its backward movement, for the cam *g* must first throw the wheel I in contact with the wheel K, and said cam is so formed as to allow the rake to dwell or rest a cer-
697 tain time before moving forward; this arrangement admits of the platform receiving a necessary amount of grain to form a gavel before being taken off.

In cases, however, where there are heavy crops, the wheel I may be kept up to the wheel K by means of a pin or key, and no cessation of movement allowed the rake.

Thus it will be seen that by a very simple arrangement of means, the desired movements are given to the rake.

I would remark that pinion *e* with cam *g* may be shifted beyond contact with the lever A′, said lever being extended within reach of the driver, thus placing the movements of the rake under his control. This extension of lever A′ is not shown, as the mode of application is obvious, and may in many cases be dispensed with entirely.

Having thus described my invention, what I claim as new, and desire to secure by letters patent, is:

1st. The arrangement of the wheels I, K, G, toothed at their peripheries in sections, in connection with the bent bar O, cam H, and rake-bar L, attached to the upper surface of the wheel K, substantially as and for the purpose set forth.

2d. The arrangement of the wheel I, of the pinion *d*, *e*, cam *g* and lever G′, and spring *c*, substantially as shown for the purpose of giving

the necessary dwells or cessations of movement to the rake, as and for the purpose set forth.

ISAAC C. TWINING.

Witnesses:
EDWARD ATKINSON.
FRANCIS B. THOMPSON.

698 *Defendants' Exhibit, Lindsay Patent.*

No. 30882, December 11th, 1860. Improvement in rakes for harvesters.
Certificate. Petition. Specification.

To all whom it may concern:

Be it known that I, Stephen A. Lindsay, of Unionville, in the county of Frederick and State of Maryland, have invented certain new and useful improvements in automatic rakes for harvesters, and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of a harvester to which my rake attachment is applied.

My invention consists in the combination of a hinged platform with an automatic and revolving rake, the shaft of which is connected with the gearing of the machine by means of an universal joint, and which shaft is supported by braces and stays secured to the platform so as to cause the rake to rise and descend simultaneously with said platform when the machine passes over uneven or broken ground.

And it further consists in connecting the rake and reel heads to the rake and reel shanks, by means of a hinge or link and a restraining spring, for the purpose of allowing the said heads to yield to the outside board of the platform when that side raises or lowers in passing over uneven ground.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

699 A represents the frame of the machine. It is supported by the carrying and driving wheels B, and by the castor-wheel C. This frame is unyielding, and being supported by those three wheels, and having a loose tongue, no part of it bears on the necks of the team. The movable frame E, consisting of the longitudinal pieces *a* and the cross pieces *b*, is hung to the main driving shaft, to which the wheels B are secured, and can swing on said shaft. It can be lowered and raised or retained in any desired position by means of the lever D, which has its fulcrum on the frame A at *d*, and to the end of which the frame E is hung by means of the link *e*. The long arm of the lever D extends sufficiently forward to enable the driver while riding on one of the horses which draw the machine to operate said lever, and thus to raise or lower the platform.

The platform F is hinged at *f g* to the pieces *h i* of the movable frame E, and can freely play on said hinges. The entire gearing of the machine for operating the cutter-bar, as well as the rake, is mounted on the movable frame, and when the latter is raised or lowered the platform and rake are moved simultaneously with it, and the relative positions of the different parts are not changed, consequently the perfect working of the parts are not interrupted. The circular guide-piece *p*, of the movable frame E, passes through the slots *k* of the frame A, and restrain said frame E from descending below a given point, whilst it is

free to rise above that point in accommodating itself to any projections on the ground. The gearing of the machine is as follows: The wheel C on the main shaft drives the pinion H, on whose shaft the bevel wheel I is secured, which in its turn drives the crank pinion, to the cranks of which the pinion K is secured, which operates the cutter-bar L. The horizontal bevel wheel W is operated by a pinion on the main shaft, and turns the shaft *l* and the fork M of the universal joint *q*, which latter turns the fork O and the inclined rake-shaft P, to
700 which the rake and reel arms Q are secured. The upper part of the rake-shaft is supported by a forked stay, N, the forked ends of which diverge and are hinged to the platform at *r*, and thus when the outer end of the platform F is raised or lowered by the machine passing over uneven ground, the upper end of the rake-shaft and the rake are raised simultaneously by means of the stay N, and descend by their own weight when the elevation in the ground has been passed over. The upper part of the stay N is prevented from moving sideways or downwards by being hinged to the brace R, which is pivoted at *s* to the longitudinal bar S of the movable frame. The rake and reel heads T are hung to the arms Q by means of the links *n*, and they are retained in their proper working positions by the action of the springs *o*, one of which is secured to the inner end of each rake-head and to the lower side of the corresponding rake-arm. By this connection the rake-heads are made yielding, and will move inwards when their outer ends come in contact with the vertical side V of the platform, as may be the case when the platform passes over broken ground, whereby its outer end is raised suddenly, while the operation would be entirely interrupted in such an emergency if the rake-heads were secured rigidly to their arms. The use of the universal joint and inclined shaft obviates the necessity of a cam to raise and lower the rake and reel as heretofore done, and is much more simple and effective than the cam movement.

Having thus fully described the nature of my invention, what I claim herein as new, and desire to secure by letters patent, is—

In combination with a hinged platform and a hinged revolving reel and rake, the inclined shaft P and universal joint *q*, for the purpose of retaining the rakes and reels in their proper relative positions to the platform, when the latter is raised or lowered, substantially in the manner herein described.

701 I also claim attaching the rakes or reels to their respective arms by means of the links *n* and springs *o*, substantially in the manner and for the purpose herein described.

STEPHEN A. LINDSAY.

Witnesses:
A. B. STOUGHTON.
J. HIRSCH.

Defendants' Exhibit Lindsay.

Patent No. 24944, dated Aug. 2, 1859. Certificate. Petition. Specification.

To all whom it may concern:

Be it known that I, Stephen A. Lindsay, of Unionville, in the county of Frederick and State of Maryland, have invented certain new and useful improvements in harvesting machines, and I do hereby declare

that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Fig. 1 represents a perspective view of the said machine.

Fig. 2 represents a longitudinal vertical section through the frame of the same.

The nature of my invention relates to the attachment of the self-rocking apparatus of harvesters, and consists in the manner of hinging the platform of the harvester, and the circular guideway which controls the undulating motion of the rake to the frame of the machine,
702 as that both the platform of the harvester and the rake shall rise and descend simultaneously when the machine passes over uneven or broken ground.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A represents the frame of the machine, which is supported by the two driving-wheels, B, on the axle *a*, and by the caster wheel C, which is secured to a brace on the front end of the frame; this frame being supported by the three wheels described, cannot be raised and lowered, and its weight does not bear on the team as in machines which are supported by the two driving-wheels only.

Within the frame A is hung another movable frame, which consists of two longitudinal bars, D, which are hung to the driving-shaft *a*, and two cross-pieces, E, to which the platform F is secured, the front ends of the bars D rest on the cross-bar *b*, which was provided at both its ends with circular guide-pieces, G, which can slide freely in suitable slats in the frame A, and which are perforated with holes, 10, for the insertion of a pin to hold the frame in any desired position.

H represents a hand-lever, which is pivoted to the standard I, and has its fulcrum at *c*. K represents a rod which is pivoted to the end of the hand-lever H, and the lower bent end *d* of which supports the cross-bar, *b*; *f* represents a stop-plate, which is secured to the side of the lever H, and the edge of which, when resting in one of the notches 1, of the standard *g*, holds the lever H, and consequently the movable frame in any desired position.

12 represents a vertical shaft, which is held in its position and has its bearings in the vertical supports L. M represents a circular plate or table which is secured to the shaft 12, and which is rotated when the bevel-wheel N is operated upon by the bevel-wheel O. P represents four arms to which the reels 2 and rake Z are respectively secured; their inner ends are hinged at *k* to the standards Q, and
703 can freely play on their hinged points, while the arms P are guided in their vertical motions by playing within the vertical guide-pieces R. L represents friction rollers which turn on the brackets *m*; they being secured to the arms P, their friction rollers support the arms in their circular motion by running on the guide-piece S, which is supported by suitable rods *t*; the shape of the latter is represented in Fig. 1; when seen in a top view it appears in a true circular shape which has the shaft 12 as its centre; from a side view it appears as two half circles which are connected by inclines, and as the rake-arms rest on said guide-pieces by means of their friction rollers, it follows that they are raised and lowered alternately, according to the shape of the guide-piece S.

T represents the platform of the harvesting machine; *n* is the cutter-bar which is driven by the pitman *o*, the latter being actuated in the usual manner.

The frame of the platform is composed of the finger-bar U, which is

hinged at *p*, to the bar *b*, and the frame pieces V and W, which are hinged together at *q*, while the piece W is hinged at *r* to the bar X, of the frame A; the outer end of the platform is supported by a caster wheel V, the shaft of which passes through the frame piece W; thus it will be seen that when the outer end of the platform is raised or lowered, it will turn freely on the hinged joints *r* and *p*, but it is essential that the rake-head should move simultaneously with the platform if the machine shall work without interruption.

To accomplish this, I make the circular guide-piece S of two pieces, which are hinged together at *u* in such a manner that one of the pieces may be turned on said hinges while the other remains stationary. The movable part of the guide S is connected with the frame of the platform T, by means of the links *v* and *u*, which are respectively secured to the arm *x* of the guide-piece S, and to the post *y* of the platform frame, and by this arrangement the guide-piece S is raised or lowered by a corresponding movement of the platform, and thus the rake Z and reels
704 2 are caused to clear the platform with the same space between them, no matter to what position the platform is brought by the roughness of the ground.

As above described, I use but one rake, Z, which is attached to one of the arms P, while the arrangement of the other arms is such as to act as reels, it being evident that in this arrangement a reel of the usual construction could not well be applied to the machine. I will now describe the arrangement by which the front end of the platform may be raised or lowered without interfering with the proper and effectual operation of the rake and reels. By operating the lever H, the bar *b*, which is suspended to the rod K, and consequently the frames D, F, and the platform M, are raised and lowered, and as the finger-bar U is hinged to the cross-bar *b*, it follows that it would turn on said hinge and not participate in the movement of the frames as described; to effect this simultaneous movement I employ a bar, *z*, which is secured at 4 to the bar *b*, the end of the bar 3 is secured to a small shaft, 5, within the bracket 6, on the stationary frame A, so that when the bar *b* is raised or lowered, the shaft 5 will be turned on its bearings in the bracket 6.

7 represents another bar which is pivoted at 8 to the shaft 5 and the end of 9, of which is firmly and rigidly secured to the cutter-bar U, and thus, as the bar *b* is raised or lowered, the shaft 5 will be turned, and the bar 7 will cause the cutter-bar U to follow the motion of the bar *b*, while the free motion of the platform T is not interfered with by reason of the pivoted joint at 8.

Having thus fully described the nature of my invention, what I claim therein as new, and desire to secure by letters patent is:

The combination of the hinged guide-piece S, with the hinged platform T, for the purpose of retaining the rake and the reels in their proper relative positions towards the platform, when the latter is raised or lowered substantially in the manner herein described.

I also claim the combination of the bar 3, shaft 5, and the
705 hinged bar 7, with the movable frame of the machine, and the finger-bar U, for the purpose of raising and lowering the latter without interfering with the free movements of the platform on its hinges, substantially in the manner herein described.

S. A. LINDSAY.

Witnesses:
A. B. STOUGHTON,
THOS. H. UPPERMAN.

Defendants' Exhibit, Miller.

Patent, No. 2841, dated December 3d, 1861. Whole No. 33845. Certificate. Petition. Specification.

To all whom it may concern:

Be it known, that I, Lewis Miller, of Canton, in the county of Stark and State of Ohio, have invented certain new and useful improvements in harvesting machines, and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings making a part of this specification, in which—

Fig. 1 represents a perspective, so much of a harvesting machine as will illustrate my invention, and,

Fig. 2 represents, on an enlarged scale, a side view of a toggle coupling link, by which the reel is drived directly from the main axle of the machine and allowed to rise and fall with the platform or finger-bar, independently of the main frame.

The reels of harvesting machines are almost invariably driven
706 by motion derived from the main driving and supporting wheels, or their axle, and in machines where finger-bar is hinged to the main frame and has a rising and falling motion independent of said main frame, the mechanism, by which motion is transmitted across this joint, and said finger-bar, platform, and reel, allowed to rise and fall, without throwing off or slackening the belt, has been complicated and not altogether reliable or desirable.

There are two prerequisites in the construction and operation of a reel; first, it must be adjustable, so that it may be made to operate equally well upon short or long straw. And the second, it must turn with certainty when the machine is cutting, else the straw will hang and clog on the cutters, or not be properly drawn into them, and carried back over the finger or on to the platform.

The object and purpose of my invention is to make a simple connection between the main axle and the reel shaft, that will be flexible enough to allow the reel to move with the hinged finger-bar or platform, and rigid enough to ensure the working of the reel whenever and as soon as the cutters are set in motion.

And the nature of my invention consists in the use of a toggle link between the end of the main supporting axle and the end of a pulley shaft, whence the reel is driven by belt or otherwise, so that the reel may, in rising and falling, and in approaching or receding from the main frame, still continue in motion without being cramped or checked.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawing.

A represents a main frame carried by a pair of supporting and driving wheels B, on independent axles or on a common axle, as may be desired. On the wheels B are placed cog-gears C, which work into the pinions on a common shaft, said pinions being furnished with a pawl or ratchet, or spring clutch, each so that one of the wheels may be loose when the machine is turned around, and both of them loose
707 when the machine is backed. From the pinion shaft the cutter-bar is worked by the ordinary well-known mechanical appliances, by means of a pitman D.

At the front of the main frame, on the grain side thereof, is pivoted by a swivel joint, E, the front end of the bar, F, the rear end whereof inclines downward, and may terminate on a shoe which rests upon the ground. The rear end of the bar F, or its shoe, is connecting to the main frame at or near its rear by a hinged brace bar, G.

The finger-bar H is connected to the bar F at or near its rear end, and can rise and fall with said bar F, which is hinged at *a*, and the bar F can rock or roll on its swivel joint E also, so that there is nothing to cramp the free rising and falling of the finger-bar, as it yields to the inequalities of the ground. Should a platform be used, it is connected to the finger-bar, and is also, as well as the reel (as will be described), can all rise and fall, and still maintain the same relative position to each other.

One of the reel-posts, I, is set upon the bar F, and the other, J, is attached to the outside divider K (but this latter may be connected at any other convenient point or part at the outer end of the platform or finger-bar). The reel-shaft L is hung in these posts I J, and is adjustable therein, so as to be raised and lowered to adapt the reel to taller or shorter straw or stalks. Near the lower end of the reel-post I there is a box or bearing, M, adjustable in the slat *b*, and in this bearing is hung a shaft, *c*, carring a pulley, N, and from this pulley N an endless belt passes over and around a pulley, O, on the reel shaft, by which the reel is driven.

The end of the main axle next the cutting apparatus, and the end of the small pulley shaft *c*, next the main frame, may be made square or many-sided, so as to receive the square or many-sided pode *d e* (Fig. 2), on the ends of the toggle link P. The central portion (P) of this toggle link is connected to the pods or sockets *d e*, through universal joints *f g*, so that the two shanks of the main axle end of the pulley-
708 shaft may have any position that the irregularities of the ground may give them, and yet this toggle link will continue to drive the pulley-shaft whenever the axle turns. The shanks (one of which is shown at *h*, Fig. 2) are long enough to allow them to play through their pods or sockets *d e*, but without slipping out or disconnecting therewith.

The universal joints *f g* allow the toggle connection to assume almost any shape, whilst it continues as constantly and uninterruptedly to drive the reel as though it was rigid and non-flexible. I thus got a very simple and very efficient means of transmitting motion across the hinged joint, by which the finger-bar is connected to the main frame, which is yielding in its character, but as constant in its operation as though no joint were used.

I have said that the shank was on the end of the main axle; now it is obvious that in machines where the supporting or driving wheel or wheels are on the outside of the frame, and the wheel or wheels on the outer ends of the axle, that this shank may be upon the end of the hub of the wheel instead of the end of the axle, and accomplish a similar purpose. And by showing this connection with a machine like that in the drawing, I do not mean to confine myself exclusively to such a machine, as it may be applied to many others different from it.

Having thus fully described my invention, what I claim is—

In combination with a harvesting machine that has its finger-bar hinged to the main frame, and whose reel is operated from the main drive-wheels, a toggle-link connection between said drive-wheels or axle, and the reel-shaft, so that the finger-bar and its appliances may be free to rise and fall in conforming to the inequalities of the ground over which it is passing, and continue to be driven without cramping, substantially as described.

LEWIS MILLER.

Witnesses:
ISAAC HAZLETT.
WILLIAM BARBER.

709 *Defendants' Exhibit, Ball & Butler.*

Patent No. 18788, dated Dec. 1st, 1857. Extended December 1st, 1871.

To all whom it may concern:

Be it known that I, E. Ball, of Canton, in the county of Stark and State of Ohio, have invented a certain new and useful improvement in grass harvesters, better known as Ball's Improved Ohio Mower; and I do hereby declare that the following is a full, clear, and sufficient description thereof, reference being had to the annexed drawings, making part of the same, of which—

Fig. 1 is a side view of my improved machine.

Fig. 2 is a rear view of the same.

Fig. 3 is a plan or top view of the same.

Fig. 4 is a detached view of one of the pinions and a portion of one of the spur-wheels, the pawl and ratchet of the pinion being shown.

Fig. 5 is a detached plan or top view of one of the pinions.

My invention consists in a peculiar manner of attaching the finger-bar to the frame of the machine. The frame of the machine A is of rectangular form, and is supported by two driving-wheels, B B, each of which has a separate axle, C, and also a spur-wheel, D, secured to the inner sides of the spokes and gearing into a pinion, E. Both of these pinions are placed loosely on the ends of a horizontal shaft, F, which runs in suitable bearings, *a a*, on the frame A. To this shaft F are permanently secured two caps, G, within each of which a pawl *b* is secured; and these pawls catch into the teeth of ratchets H H, which are attached to the inner sides of the pinions E E (see
710 Figs. 4 and 5.) The pawls have small springs *c* directly over them, one over each, which keep them in the teeth of the ratchet.

I is a bevel-toothed wheel, securely attached to the shaft F. The wheel I gears into a bevel-pinion, J, at the upper end of an inclined shaft, K, which runs in suitable bearings, *d d*, attached to the frame A. Directly back of the pinion J, on the shaft K, there is a fly or balance-wheel, L, which serves to prevent little irregularities in the action of the machine or of its wheels from affecting the action of the sickle.

At the lower end of the shaft there is a shaft pulley, M, to which one end of a connecting-rod, N, is attached, the opposite end being pivoted to a sickle, O, working between fingers *e e* upon the finger-bar P.

To the inner end of the finger-bar P there is rigidly secured at a right angle an inclined bar, Q, the upper end of which is attached to a small rod, *f*, by a pivot, *g*, forming a joint or hinge. The rod *f* being itself secured within a cylindrical socket, *h*, by a nut, *h'*, screwed upon the end of said rod, which has a thread cut thereon for this purpose. The socket *h* is fastened to the under side of the front cross-piece *i* of the frame, the bar Q, running lengthwise of the frame and at its side, as shown in the drawings. To the inner end of the finger-bar P, the brace rod R is connected by a pivot, *j*, the outer end of said brace-rod being attached to the back part of the frame A by a pivot, *k*.

As the machine is drawn along, the driving-wheels B B, of course move in the direction indicated by arrow 1, Fig. 4; and the spur-wheels D D, moving in the same direction, cause the pinions E E to move in direction of arrow 1. The teeth of the ratchets H H, catching against the pawl *b*, cause the shaft F to rotate, and motion is thereby communicated to the sickle O through the shaft K and connecting-rod N. In case of the machine being moved backwards, the sickle O is not

operated, as the spurs and pinions there, moved in the direction indicated by arrows 2 and 2′ and the teeth of the ratchets H H, slip underneath of their respective pawls.

711 The cutter P is permitted to rise and fall bodily, or either end may rise and fall, according to the irregularities of the ground, in consequence of its connection to the frame A by the bar Q, for the upper end of the said bar is connected to the frame by an universal joint, the pivot *g* allowing the finger-bar and bar Q to rise and fall bodily, and the ability of the rod *f* to turn in the socket *h*, permitting either end to rise and fall, the base rod C, serving to steady the finger-bar while it is moved, and to prevent it from being wrenched out of place by the resistance of the grass or of obstacles; and thus the finger-bar is under all circumstances at liberty to conform to the unevenness of the ground, and consequently the sickle will perform its work better and with greater uniformity than it otherwise could do.

I am aware that I am not the first to hang the finger-bar from the main frame so that it can yield to the inequalities of the ground. This has been done by prolonging the finger-bar, or by attaching to it another bar prolonged beyond and the rear of the main frame, and driving-wheels, as in the case of the harvester of Jonathan Haines, patented September 4th, 1855 (the which in all its parts I entirely disclaim), the finger-bar as thus extended being hung from the front cross-piece of the frame by rods, the ends of which are hooked in the staples respectively to the extended finger-bar, and to the front cross-piece.

The chief objection to this arrangement is, that as the machine passes over the grass ready cut, which is left spread upon the ground at the previous passage of the sickle, the extension of the finger-bar pushes it up before it, and finally takes it up and carries it along until it falls off in large quantities, thus heaping the grass and preventing it from drying so thoroughly.

At the same time this gathering of grass by working the crank in front of it either renders the working of the sickle very difficult, or stops it altogether. This difficulty, it is obvious, cannot occur where

712 (as in my improvement) the finger-bar ends on the inner side of the machine, and is so attached by the brace-rod R and the rigidly attached bar Q that perfect freedom of motion in rising and falling is combined with a firm connection, and at the came time leaves the ground entirely free in the rear of the driving-wheels and within the line described by the forward motion of the inner end of the sickle, as shown. The broad and rigid attachment of the inclined bar Q to the finger-bar P so firmly supports and holds the latter in place, that the objections which might possibly otherwise be brought against the use of the short curved arm R are entirely obviated.

Having thus fully described my improved mower, what I claim as my own invention, and desire to secure by letters patent, is:

The combination of the short curved brace-rod R with the rigid and broad angle attachment of the inclined-bar Q, to the finger-bar P, the whole arranged for joint operation substantially as and for the purpose above set forth.

In testimony whereof I have hereunto set my hand before two subscribing witnesses.

E. BALL.

Witnesses:
SAND SLAUTER,
PERCY S. SOWERS.

713 *Defendant's Exhibit, Palmer & Williams.*

Patent No. 10459, dated January 24th, 1854. Certificate. Petition. Specification.

To all whom it may concern:

Be it known that we, Aaron Palmer, of Brockport, in the county of Monroe and State of New York, and Stephen G. Williams, of Janesville, in Rock County and State of Wisconsin, have invented a new and useful improvement on the harvesting machine or reaper; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making a part of this specification; Fig. 1 being a top view of the entire machine; Fig. 2 is a rear elevation, and Fig. 3 is an end elevation.

Similar letters indicate like parts in all the figures.

The frame of our harvesting machine or reaper, is composed of the front piece A, the paralled pieces B, and the end piece C, and the transverse pieces D and E. The driver's seat is composed of the pieces F F F F, crossing each other so as to form an X, and the reel-bearers G G, on which, at H, is a board for a seat, and at I is the foot-board. The reel is made with a shaft nearly five feet long, with one set of arms projecting from the middle, and another set from one end of the shaft at right angles. To these arms are attached ribs X^3, running parallel with the shaft, and project beyond the end of the shaft nearly half their length, of which K is a top view of the reel. This reel has its
714 bearings on the end of the reel-bearers at L L, and is parallel to the front piece A, and revolves on its bearings by means of a belt or chain connecting it with the hub of the main driving-wheel. The main driving-wheel M of the machine is placed between the transverse pieces D and E, and between the front piece A and the end piece C of the frame, and has its bearings on the arch supports N N arising from the transverse pieces D and E. On the side of the main driving-wheel is a bevel-gear mashing into the pinion O, which runs on the transverse crank-shaft P, which has its bearings on the arch support N at R^2, and in a box at R. This pinion runs loose on the crank-shaft, but has a ratchet formed on the largest end which receives a corresponding ratchet, which is connected to the shaft by a key or feather, and is slid out and into gear by the lever S. T is a curved platform for receiving the stalks and heads of grain as they are severed by the cutting apparatus, and is in form a sector of a circle. The cutting apparatus is on the front edge of the platform, and may be constructed in any well known or usual manner, and is operated by the crank on the end of the crank-shaft P. A straight guard is placed on the inner side of the platform, and is fastened to the platform near the driver's seat.

The curved guard U arises from the outer edge of the platform T to guide the grain as it is raked off. V is the operating lever, vibrating on the centre of a circle, of which the platform T forms a sector. At one end of this lever are attached two sets of the segments of a bevel-wheel, one on the lower and the other on the upper side of the lever, and one of which passes above and the other below one of the arch supports N. The pin W passes through these segments and the arch supports N, and forms the fulcrum on which the lever turns. A corresponding set of bevel-wheels are placed on the shaft of the main driving-wheel, so as to mash into these segments, and so arranged that as soon as
715 one set of cogs cease to operate the other set commences, and thus carries the lever alternately backward and forward.

The ratchet-ring Y is connected with the bevel-wheels Z by means of a key or feather, and slides freely backwards and forwards on their hub, and connects with a corresponding ratchet on the hub of the main driving-wheel, and is thrown in and out of the gear by the person driving the team by means of the lever *a*, so as to regulate the size of the gavels whether in heavy or light grain. *b b b* is the rake and the rake-frame, with the iron arm *c* attached on one side and the joint *d*, formed by a hole in the arm, at the other side. The operating lever passes through the holes *d* and *f*, allowing the rake-frame to operate freely on the lever.

A mortise is made on the upper edge of the iron arm at *h*, into which the spring latch falls when the rake-head is up. As the operating lever is carried back the iron arm *c* strikes the foot-piece *k*, and the rake-head is carried up sufficiently high to pass over the next bundle of grain.

The latch falls into the mortise *h*, and holds it up; as the rake is carried forward the latch *p* passes under the wedge *l*, and is raised out of the mortise. When the rake-heads falls, the teeth striking into the fallen grain are held firmly down by the spring *m*, which causes an even pressure, whether the grain is heavy or light, in thick or thin layers, until it is drawn off the platform by the operation of the lever V, and so on alternately. The lever V may be operated by a crank or by a combination of levers instead of the bevel-gear. It will be perceived that the grain is discharged from the platform in such a position as to be entirely out of the way of the horses which draw the machine during their succeeding tour around the field, and that any number of acres can be cut before any of it is obliged to be bound or removed.

We do not claim the discharging the cut stalks and heads of grain from a platform by means of the combination of a rake with a
716 lever, and the co-operation therewith of a series of teeth on the face of the main driving-wheel, and an inclined rail rising above the curved guard of the platform, as these are already secured to us by letters patent bearing date July 1st, 1851. But we do claim:

The method of transferring motion to the rake on the platform from the driving-wheels, by means of the double curved rack and pinion on the axle of the driving-wheel, the iron arm *c*, latch *p*, and spring *m*, as herein described.

Also, the method of hanging the reel so as to dispense with any post or reel-bearer next to the standing grain, as herein described, thereby preventing the grain from getting caught and being held fast between the divider and reel-supporter.

AARON PALMER.
STEPHEN G. WILLIAMS.

Witnesses:
JOSEPH GANSON,
FRED'K LANDON.

Defendants' Exhibit, Dorsey.

Patent No. 14350, dated March 4th, 1856. Certificate. Petition. Specification.

To all whom it may concern:

Be it known that I, Owen Dorsey, of Howard County and State of Maryland, has invented certain new and useful improvements in rakes

for harvesting machines; and I do hereby declare that the following
717 ing is a full, clear, and exact description thereof, reference being had to the accompanying drawings forming a part of this specification, of which—

Fig. 1 is a top view;

Fig. 2 a side elevation, and

Fig. 3 an end elevation.

The improvement consists of a revolving rake formed with four arms, *c c c c*, each pair of arms formed of metal or wood with an opening at their half-length of a longitudinal form so as to allow them to pass over the end of a vertical turning shaft; *a a* are rake-heads attached to the arms *c c* at a suitable angle; *i* is the vertical shaft, having its upper end squared so as to receive the arms over it. A bolt, *b*, passes through the sides of the arm at the mortise or opening, and also through the shape *i*, and upon this bolt the arms have a parallel vibratory movement allowed them.

The vertical shaft has rotation communicated to it by a suitable gear-wheel, *e*, from the master-wheel; *f f* represent semicircular portions of a rail, upon which the arms *c* have their movement, and with the view of facilitating the travel thereon, the arms may be furnished with friction rollers. The rails serve as guides in bringing the rakes to the platform, and after their passing over it elevate the arms out of the way, and to accomplish this result the railway at the junction of the half-circles instead of being continuous is joined by short inclined portions *m* (see Fig. 3). The object of these is to permit the arms of the rakes to be suddenly dropped at the cutting edge of the platform, and as suddenly raised at the delivery side thereof.

The main portions of the rail are also inclined at or near *or* an angle of 45 degrees to the shaft *i*, and the tendency of the slope is towards the platform.

The general arrangement is such that the rake-head is brought by a sweeping descent upon the front edge of the platform, and in so doing draws the uncut grain towards the cutters, then the rake passes over the platform with a sweep or quarter-circle, and forms a side delivery at the rear of the driving-wheel.

718 *H* is a curved fender-board raised on the nose-edge of the platform *A*.

The machine in the cutting and gearing portions is such as now in use.

The railway circles *f f* are supported by suitable metal rods, *o o*, and by these rods it may be adjusted.

The operation of the rake is as follows: As the rake-head passes over the platform *A* its movement is horizontal, the arm *c* passing over the rail from *m* to *h*, Fig. 1, but on reaching the edge of the platform the rake-head is suddenly raised by the arm passing up the incline *m* (see Fig. 3) of the guide-rail, while the rake and opposite end of the arm drops at a corresponding incline, and by continuing its movement the rake reaches over the heads of the grain, and gradually descending by the guide-rail draws the wheat towards the cutters; by this means I dispense entirely with the reel used on harvesters for drawing the grain to the cutters, and by the quick inclines at *m* the lifting and descent of the rakes are rapidly performed, while in the movement of the rake over the platform it is slow and steady, thus preventing anything like scattering of the grain in the side delivery, and the deposit of it is made in proper gavels or bundles out of the track of the next round of the machine; the rakes and arms being balanced work with

little expenditure of power, and, being exceedingly simple, are not liable to be thrown out of order. Besides, the small expense of adapting it to harvesters now in use is not to be overlooked.

Having described my improvement in rakes for harvesters, what I claim as my invention, and desire to secure by letter patent, is:

The combination with the rake-arms *c c*, to which the rakes are firmly attached; of the vertical revolving shaft *i*, and cam-way or guides *f f*, *m m*, from which the rake-arms receive an undulating motion in a vertical plane revolving about said shaft *i*, substantially in the manner and for the purposes set forth.

719 In testimony whereof I have hereunto signed my name before the subscribing witnesses.

OWEN DORSEY.

Witnesses:
JOSHUA A. THOMPSON.
ROBERT BROWN.

Defendants' Exhibit, Manny.

Patent No. 17779, dated July 14, 1857. Extended July 14, 1871. Certificate. Petition. Specification.

To all whom it may concern:

Be it known that I, John P. Manny, of Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful improvements in harvesting machines; and I do hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Fig. 1 represents a top plan view of the machine.

Fig. 2 represents a side elevation, with the several parts shown in black lines, and also in a different position in red lines.

Fig. 3 represents a section through a spring drum, which is used for taking up a portion of the weight of the finger-bar to prevent it from dragging too heavily on the ground.

720 Similar letters of reference, where they occur in the several figures, denote like parts of the machine in all of them.

The nature of my invention relates to the manner of raising and lowering the platform, so that in any and all of its positions it shall hold and maintain its horizontality in front and rear.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

To an axle, A, supported on wheels B B, are affixed in such manner as that the axle can freely turn in them, two boxes or bearings, C C.

To these boxes are secured one end of the pieces D D, which unite at E, and are supported at that point by a caster-wheel, F. So much of the frame of the machine as is supported upon the wheels B B and caster-wheel F may be said to be rigid or non-adjustable. But to the lower rear parts of the boxes C are connected side-pieces, G, the rear ends of which side-pieces are permanently secured to the finger-bar or beam H, and transverse braces, I I, pass from corner to corner of this quadrangular frame to strengthen the whole together. And thus the pieces G, H, and I constitute a frame which is also supported on the axle A, but which is adjustable in a manner to be hereafter described.

A lever, J, is hung to the rigid frame D, and extends to near the con-

ductor's seat K, so that the conductor can readily grasp or operate it. To this lever J is suspended the finger-bar H by a suspension-rod, *a*, so that the conductor can raise and lower the platform at pleasure. But in raising and lowering this platform, I desire to retain always this horizontal position; or, in other words, to be raised or lowered in parallel lines, front and rear. This it would not do if the devices used were simply those above described.

To effect this object, I use a long supporting piece, L, which extends far under the platform, as shown by dotted lines in Fig. 1. This supporting piece L is hinged to the finger bar or beam at *d*, and
721 its end is pivoted at *c* to one end of a lever, M, which has its fulcrum at *d*, and the other end of this lever M is attached to an arm, *e*, that is fixed to the piece D of the rigid frame.

The outer end of this lever L is fastened to the outer portion of the platform P, and the front part of the platform P, in turn, is hinged to the bar H at the points *h*. The effect of this arrangement is to cause the supporting-piece L to depress the platform at its after portion every time the finger-beam is raised by the lever J, the connections between the rigid frame D and said supporting-piece L acting as a compound lever to effect this purpose, and thus both the front and the rear of the platform are kept in a horizontal position whilst they are raised or lowered to any desired cutting height.

The red lines in Fig. 2 show the position which the several parts assume when the platform is raised up; the platform itself still maintaining a plane parallel to its lower position, as shown by the black lines in Fig. 2.

The finger-beam extends under the rigid frame D, about midway between the supporting-wheels of said frame, and the beam H is supported by the rigid frame as heretofore described.

When these machines are used for mowing, the platform and raking apparatus are removed, and the cutter-bar is dropped on the ground, and moves over it and in contact with it. It is desirable to cut grass low down, but the dragging of the cutter-bar is detrimental.

This is avoided as follows: On a standard is arranged a drum, *f*, having a coiled spring within it, one end of which is fastened to the drum and the other end to the axis of the drum, a ratchet and pawl is also connected to this spring drum, so that the spring may be wound up and then held at any desired strain by the rack and pawl. To this drum is connected a cord or chain, *g*, the other end being fastened to the lever J, and the amount of strain upon the spring in the drum regulates the lifting power
722 applied to the lever J, and instead of allowing the cutter-bar to drag with its whole weight over the ground, but still touch the ground, I take off so much of the dead weight of the cutter-bar by tightening up the spring as will just allow the said bar to touch the ground with a proper degree of friction to cut close, without, however, the heavy drag that the whole weight of the cutter would cause without such an arrangement.

N N are hounds hinged to the boxes C, and to these hounds the tongue O is connected. The red lines in Fig. 2 show the positions into which the several parts are thrown when the platform is raised up from its position as shown in black lines to that shown in red lines.

Having thus fully described the nature and object of my invention, what I claim therein as new, and desire to secure by letters patent, is: The combination of two frames, one of which is adjustable, and can be raised or lowered at pleasure with the lifting-piece L. and platform

P, hinged to said adjustable frame, when said parts are constructed and arranged to operate in relation to each other in the manner and for the purpose set forth.

JOHN P. MANNY.

Witnesses:
J. G. MANLOVE.
HOBART H. HATCH.

Defendants' Exhibit, Willard & Ross Patent.

UNITED STATES OF AMERICA.

To all to whom these letters patent shall come:

Whereas Hosea Willard and Robert Ross, of Vergennes, Vermont, have alleged that they have invented a new and useful improve-
723 ment in harvesters, which they state has not been known or used before their application; have made oath that they are citizens of the United States; that they do verily believe that they are the original and first inventors or discoverers of the said improvement; and that the same hath not, to the best of their knowledge and belief, been previously known or used; have paid into the Treasury of the United State' the sum of thirty dollars, and presented a petition to the Commissioner of Patents signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose:

These are, therefore, to grant according to law, to the said Hosea Willard and Robert Ross, their heirs, administrators, or assigns, for the term of fourteen years from the third day of November, one thousand eight hundred and fifty-seven, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said Willard and Ross in the schedule hereunto annexed, and is made part of these presents.

In testimony whereof I have caused these letters to be made patent, and the seal of the Patent Office has been hereunto affixed.

Given under my hand, at the city of Washington, this third day of November, in the year of our Lord one thousand eight hundred and fifty-seven, and of the Independence of the United States of America the eighty-second.

JACOB THOMPSON,
Secretary of the Interior.

Countersigned and sealed with the seal of the Patent Office.
[SEAL.] J. HOLT,
Commissioner of Patents.

724 The schedule referred to in these letters patent and making part of the same.

Extended November 3d, 1871.

To all whom it may concern:

Be it known that we, Hosea Willard and Robert Ross, both of Vergennes, in the county of Addison and State of Vermont, have invented a new and improved grain and grass harvesting machine; and we do

hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings making part of this specification, in which—

Fig. 1 is a side sectional elevation of our improvement taken in the line (*x*) (*x*), in Fig. 3.

Fig. 2 is a front view of the same.

Fig. 3 is a plan, or top view of the same.

Similar letters of reference indicate like parts in the three figures.

This invention consists in a peculiar mode of attaching the cutting device to the machine, so that the cutting device may be allowed to yield of "give" to correspond to the inequalities of the surface of the ground, and also permitted to be raised bodily at the will of the operator, in order that it may pass over obstructions and also be free from the ground when not in use and the machine is being moved from place to place.

To enable those skilled in the art to fully understand and construct our invention, we will proceed to describe it.

A represents a horizontal rectangular frame, which may be constructed of metal or wood, and supported by two wheels, B B, which are placed loosely on a shaft or axle C, which is fitted in suitable bearings attached to the under side of the frame.

On the shaft or axle C a toothed wheel, D, is permanently attached. The said wheel D gears into a pinion, F, which is placed on a shaft, F, in the frame A; and the outer end of shaft F has a bevel pinion (*a*) upon it; said pinion gearing into a corresponding pinion (*b*), which is placed at one end of small shaft fitted in a bearing (*c*), and having a crank-wheel (*d*) at its opposite end. To the crank-wheel (*d*) one end of a connecting-rod, G, is attached, the opposite end being connected to the sickle-bar H.

I is a bar, the outer end of which is fitted on a pivot, J, which passes through a pendent, K, attached to frame A. The inner or opposite end of this bar is curved or bent downward, and the finger-bar I is attached to it by a joint, M, said joint being formed at the upper part of a shoe, N, at the inner end of the finger-bar, as seen in Fig. 2. The inner end of the bar I, adjoining the finger-bar L, is supported by a wheel, O, which may be adjusted vertically, so as to keep the finger-bar at the desired height; said wheel O also serving to diminish side drought. The inner side of the shoe N has a projection, O^1, formed on it; and P is a lever which is pivoted to the under side of the bar I, as shown at (*e*). The inner end of this lever is curved downwards, and has a set screw (*f*) passing through it, said screw being directly over the projection O^1 of the shoe N. The outer end of the lever P has an right pin (*g*) formed on it, said pin passing through the bar I, and having a cord or chain, J, attached to it, the cord or chain passing over a sheave (*h*), and being attached to a pulley (*i*), which is placed loosely on the axle C, the pulley being connected with the axle, so as to turn with it when desired, by means of a clutch, Q, which is operated by a lever, R. The clutch is constructed in the usual way, it being merely a sliding hub placed on the axle C, and connected with it by a feather and groove. One end of the hub has a taper opening made in it, and fits over a conical or taper projection on one side of the pulley. The opposite end of the hub has ratchet teeth (*j*) formed on it, either of which may act against a tooth projection (j^1) on the hub of the wheel B^1, and connect it with the axle when necessary. The other wheel B is connected with the axle by a separate or independent clutch, S.

The finger-bar I is of the usual construction, as also is the sickle, the usual saw-shaped teeth (*k*) being attached to the bar H, which is allowed to work back and forth on the finger-bar.

T is the platform, the front end of which is attached to the finger-bar L, and the back end is suspended by a chain (*l*) from a bar (*m*) attached to the frame A.

The operation is as follows: As the machine is drawn along, the sickle is operated by the rod G, crank-wheel (*d*) and gearing D E; and as the finger-bar L is attached to the bar I, by the joint M, and the outer end of the bar I is allowed to work freely on the pin or pivot J, it will be seen that the cutter-bar, and consequently the sickle, will be allowed to conform to the inequalities of the surface of the ground for either end of the cutter-bar may be raised separately, or both ends may be raised at once, according to the undulations of the ground. In case, however, the finger-bar is to be raised bodily, that is, horizontally upward, in order to pass over an obstruction of any kind, it will be seen that the finger-bar, in consequence of its joint connection with the bar I will require support. This is obtained by the lever P, which, when its outer end is raised, has the set screw (*f*) at its inner end pressed down upon the projection O′ of the shoe N. The bar I is raised by actuating clutch Q, so as to connect the pulley (*i*) with the axle C; the said pulley, as it rotates winding up the cord or chain J, and raising the bar I and the outer end of the lever P. The bar I works in a pendant guide, U, attached to the frame A, and the said bar has friction rollers (*m′*) attached to it to diminish friction between the bar and guide.

When the machine is used as a grain harvester, the bar I is adjusted outward from the frame A, as shown clearly in Figs. 2 and 3, so
727 as to allow a space (a^x) between the inner edge of the platform and frame A, for the grain to be raked off. In this case the pivot J is placed through the extreme end of bar I. When, however, the machine is to be used as a grass harvester, the pivot J is placed through a hole (b^x) at some distance from the outer end of said bar, and by this means the inner end of the cutter-bar is brought near the side of the frame A. In cutting grass the finger-bar, or rather its shoes, rest upon the surface of the ground, but in cutting grain the finger-bar is elevated by adjusting the wheel O. In the latter case the sickle-bar H is kept in a horizontal position by the lever P, and as the cutter is always raised comparatively high in cutting grain, it is not liable to come in contact with the ground, even if it be very undulating, and, therefore, the self-adjusting movement of the finger-bar is not necessary.

By having the two wheels placed loosely on the axle and connected thereto by clutches, the machine may be readily turned by disconnecting the outermost clutch from the axle.

We would remark that the pulley (*i*) may be turned by hand when desired, by having a handle or lever V attached to it.

We do not claim broadly attaching the finger-bar to the machine by a joint, for this has been previously done, but—

What we claim and desire to secure by letters patent is—

The combination of the hinged finger-bar L, with the adjustable bar I, lever P, regulating set-screw (*f*), and wheel O, the whole being constructed and arranged in relation to the main frame for joint operation in the manner and for the purpose above set forth.

We also claim lever P and regulating set screws (*f*), in combi-
728 nation with bar I, chain or cord J, pulley (*i*), and clutch Q, for the purpose of raising the hinged finger-bar L, as described.

HOSEA WILLARD.

Witnesses for Mr. H. WILLARD:
W. TUSCH.
WM. HAUFF.

ROBERT ROSS.

Witnesses for R. ROSS:
IRA BINGHAM.
H. G. JUDD.

Defendants' Exhibit, Underhay Patent.

A. D. 1853. No. 1006. *Reaping and mowing machines.*

Letters patent to Frederick George Underhay, of 13 Well street, Gray's Inn Road, in the county of Middlesex, for the invention of "improvements in reaping and mowing machines." Sealed the 20th October, 1853, and dated the 27th April, 1853.

Provisional specification left by the said Frederick George Underhay, at the office of the Commissioner of Patents, with his petition, on the 27th April, 1853.

I, Frederick George Underhay, of 13 Well street, Gray's Inn Road, in the county of Middlesex, do hereby declare the nature of the said invention for "improvements in reaping and mowing machines," to be as follows:

This invention consists of giving motion to a vertical axis by
729 the movement of the carriage over the land. On the lower end of the vertical axis there are cutters, of a scimitar or other convenient shape, which, revolving with the axis, cut the crop; and by means of revolving wings the cut crop is removed towards a platform, each of such wings following a cutter in such manner that it directs the cut crop towards the platform, and then, in its continued rotation and movement, drives the cut crop beyond the platform.

Specification in pursuance of the conditions of the letters patent, filed by the said Frederick George Underhay, in the Great Seal Patent Office, on the 27th October, 1853.

To all to whom these presents shall come:

I, Frederick George Underhay, of 13 Well street, Gray's Inn Road, in the county of Middlesex, send greeting.

Whereas Her Most Excellent Majesty Queen Victoria, by her letters patent bearing date the twen'y-seventh day of April, in the year of our Lord one thousand eight hundred and fifty-three, in the sixteenth year of her reign, did, for herself, her heirs and successors, give and grant unto me, the said Frederick George Underhay, her special license that I, the said Frederick George Underhay, my executors, administrators, and assigns, or such others as I, the said Frederick George Underhay, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time, and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend within the United Kingdom of Great Britain and

Ireland, the Channel Islands, and Isle of Man an invention for "Improvements in reaping and mowing machines," upon the condition (amongst others) that I, the said Frederick George Underhay, by an instrument in writing under my hand and seal, should
730 particularly describe and ascertain the nature of the said invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said letters patent.

Now know ye that I, the said Frederick George Underhay, do hereby declare the nature of the said invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof; that is to say:

This invention consists of giving motion to a vertical axis by the movement of the carriage over the land. On the lower end of the vertical axis there are cutters of a scimitar or other convenient shape, which, revolving with the axis, cut the crop, and, by means of revolving wings, the cut crop is moved towards a platform, each of such wings following a cutter in such manner that it directs the cut crop towards the platform, and then, in its continued rotation and movement drives the cut crop beyond the platform.

Having thus stated the nature of my invention, I will proceed to describe the manner of performing the same.

DESCRIPTION OF THE DRAWINGS.

Figure 1 shows a plan, partly in section, of a machine constructed and combined according to my invention. Figure 2 shows a longitudinal section thereof. In each of these figures the same letters indicate the same parts.

a a^1, and *b* are the three wheels which carry the machine. The front wheel, *b*, is made capable of locking, as is well understood. The wheel *a* moves on a fixed axle, and the wheel a^1 is fixed on the axle *c*, on which is fixed the bevilled-toothed wheel *d*, which takes into and drives the bevilled-toothed wheel *e* on the axle *f*. On this axle *f* is fixed the bevelled-toothed wheel *g*, which takes into and drives the bevilled-tooth wheel *h*, fixed on the vertical axis *i*, which
731 is hollow. The vertical axis *i* is the cutter axis, and has cutters, *j j*, applied thereto, of a scimitar form or otherwise, which are affixed to arms, j^1, j^1, moving with the axis *i*. The arms j^1 j^1 are applied in such manner as to turn with such axis; but at the same time they are capable of being raised or lowered thereon by means of the rod, *k*, which by the key k^1 is fixed to the boss of the arms j^1. The key k^1 passes through slits or openings in the hollow axis. The bar or rod *k* has a screw formed on it; at its upper end, k^2, is a wheel and nut by which the bar *k* can be raised or lowered, and consequently the cutters. By the rotation of the cutters *j* the crop is cut or mowed, and is then moved towards and then on to the fixed platform, *l*, by the means of the wings, *m*, which are made of open basket work or other suitable materials, and such wings move the cut crop from off the platform on to a sliding floor. The wings are carried by arms, *n*, fixed to the axis *i*, as is shown; and such arms have cams, n^1, moving thereon, such cams being fixed to the wings. The cams move on inclines, *o o*, by which the wings (as the arms are carried round by the axis *i*) are caused to move forward at their lower ends, and thus to act on the cut crop, and to move it on the platform, and from the platform on to the floor, *p*, which is made to slide

to and fro so as to drop the cut crop through from time to time; and this is accomplished by means of a cog-wheel, *q*, on the axis *i*, taking into and driving a cog-wheel, *r*, which is on a fixed axis. The cog-wheel *r* has on it a projection, r^1, which, coming against one end of the lever, *s*, moves the sliding floor *p*, such floor being immediately brought back by means of a spring, *t*, or other convenient means. *u u*, are springs pressing on the cams to cause them to act on the curved inclines, and thus to regulate the positions which the wings shall take in their revolutions about the axis *i*. An inclined board, *c*, rises from the sliding floor as shown. *w* is a clutch-box for putting the cutters out of action. *x* a flap
732 hinged to the edge of the platform, which may be fixed at different positions, so as to offer an inclined plane to facilitate the moving of the crop by the wings on to the platform.

Having thus described the nature of my invention, and the manner of combining the several parts, I would have it understood that I make no claim to the parts separately; nor do I confine myself to the details herein shown and described, as the same may be varied without departing from my invention, so long as the peculiar character of the combination be retained. But what I claim is the combination herein described.

In witness whereof I, the said Frederick George Underhay, have hereunto set my hand and seal, this twenty-sixth day of October, in the year of our Lord one thousand eight hundred and fifty-three.

F. G. UNDERHAY. [L. S.]

Witness:
S. CARPMAEL.

Defendants' Exhibit, Fisher File.

Certificate.

[1 dollar. 1. Mortgage. U. S. Int. Rev. 1 dollar. 1. H. F. January 19, 1863.]

To the Commissioners of Patents:

The petition of Henry Fisher, of Alliance, in the county of Starke, in the State of Ohio, respectfully represents: That your petitioner has invented a new and useful improvement in harvesters, which [*he
733 has assigned to himself and William A. Whiteley, of Springfield, Clarke County, and State of Ohio, which) he verily believes has not been known or used prior to the invention thereof by your petitioner. He therefore prays that letters patent of the United States may be granted to him, therefore, vesting in him and his legal representatives, the exclusive rights to [*do] the same, upon the terms and conditions expressed in the acts of Congress, in that case made and provided, he having paid fifteen dollars into the Treasury, and otherwise complied with the requirements of said acts. And he hereby authorizes J. Dennis, jr., of Washington City, D. C., or his accredited agents, to act as his attorney in presenting the application, and in making all such alterations and amendments as may be required, and to receive the letters patent granted.

HENRY FISHER.

* Erased in the original.

COUNTY OF CLARKE,
State of Ohio, ss:

On this 19th day of January, 1863, before the subscriber, a justice of the peace in and for said county, personally appeared the within-named Henry Fisher, and made solemn oath that he verily believes himself to be the original and first inventor of the within described improvements, and that he does not know or believe that the same was ever before known or used, and that he is a citizen of the United States.

REUBEN MILLER,
Justice of the Peace.

To all whom it may concern:

Be it known that I, Henry Fisher, of Alliance, in the county of
734 Starke, and State of Ohio, have invented certain new and useful improvements in harvesters; and I do hereby declare that the same are described and represented in the following specifications and drawings. The nature of my invention and improvements in harvesters, consists in connecting the rake or rakes which reel or sweep the grain to the cutters, and rake it from a platform to a revolving vertical shaft, so as to vibrate independent of each other, and vibrating the rakes as they are revolved by a stationary grooved cam-way, acting on the rear end of the rake-heads behind the fulcra on which they vibrate.

And in arranging an arm or sweep in front of the rake for reeling or sweeping the grain to the cutters in advance of the rake.

To enable others skilled in the arts to make and use my improvements, I will proceed to describe their construction and operation, referring to the accompanying drawings, in which the same letters indicate like parts in each of the figures.

Fig. 1 represents such parts of a harvester as are necessary to show my improvements.

Fig. 2 is a top view of the stationary cam-way.

Fig. 3 is a side view seen in the direction of the blue arrow.

Fig. 4 is a section on the line *x x*, of Fig. 2.

In the above-mentioned drawings, A is the platform of the harvester, mounted on the wheels B, C, and D, the latter being a castor-wheel to facilitate the turning of the harvester. B is the driving-wheel, provided with a pulley for the band E, which drives the pulley F and shafts C, carrying the pinion H, which drives the gear I and vertical shaft J, which carries the rakes or rake, and sweep K K, one of the rake-heads may be used without teeth as a sweep to reel the grain to the cutters.

The shafts G and J are arranged to turn in proper boxes; and the rake-heads K K vibrate on pivots on the shafts J, independent of each other.

These heads extend back behind their fulcra and pass into the
735 groove L, in the stationary cam M, which is fastened to the platform A, and surrounds the shaft J, and protects the gear I, as shown in section, Fig. 4. The cam M is made in the form shown in the drawing, so as to let the rake down near the front of the platform, and it passes around, sweeping the grain from the platform when the rear end of the rake-head enters the groove L in the cam M, which raises the rake up nearly perpendicular, so as to pass the man which drives the horses, and as the rear end of the rake passes out, out of the groove, it

passes into the metal frame N on the cam, which forces the rake down near the front edge of the platform to sweep or rake the grain or gravel from the platform into the ground. P is the driver's seats, supported by an extension of the linch-pin R, which holds the wheel B on its axle, as shown in Fig. 1.

S is a curved arm fastened to the side of the rake-head K, to reel or sweep down the grain in advance of the rake, and insure its being cut before the rake moves it on the platform.

My improvement for raking the grain from the platform is simple and cheap, with very little liability to get out of order, and certain and efficient in its operation.

I believe I have described and represented my improvements in harvesters, so as to enable any person to make and use them without further invention or experiments. I will now state what I desire to secure by letters patent, to wit:

[Insert A of amendment, filed Dec. 10, 1863.]

[* First. In combination with the rake for sweeping the grain to the cutters and raking it (the grain) from the platform, I claim the stationary bowl or cam-way for guiding the rake as it is carried around substantially as described.]

Second. In combination with the rake, I claim the curved arm
736 on the side of the rake to push the grain down in advance of the rake, and insure its being cut before the rake shall move it on the platform.

Third. I claim so connecting the rakes to the vertical shafts that they can vibrate independent of each other.

Fourth. I claim extending the rake-head back behind its fulcrum so as to raise it by the action of the cam-way on its rear end, substantially as described.

Fifth. I claim the horizontal shaft E, gears H and I, vertical shaft J, when used to work the rakes in combination with the bowl or cam-way, substantially as described.]

HENRY FISHER.

Signed this 19th day of January, 1863, before Geo. W. Benns and Amos Whiteley.

Witnesses:

AMOS WHITELEY.

GEO. W. BENNS.

Received and filed March 20th, 1863.

UNITED STATES PATENT OFFICE,
Washington City, D. C., March 28th, 1863.

SIR: You are hereby notified, that your application for a patent for an alleged improvement in harvesters, in the features embraced in the 1st and 4th clauses of the claim, has been adjudged to interfere with a similar application of D. J. Powers, for whom J. S. Brown, of Washington, D. C., is attorney, who has been notified thereof. A hearing will be granted to the parties on the fourth Monday in June, next.

The testimony must be closed on the Monday preceeding the day of hearing. The arguments of counsel must be filed in the office on the day of hearing. Further time for filing arguments can only be granted on application of counsel, sustained by sufficient affidavits, in
737 conformity with the provisions of the acts of July 4th, 1836. The testimony must be in conformity with the enclosed rules un-

* Erased by amendment, filed Dec. 16, 1863.

der the oath or affirmation of persons who are not interested in the question at issue.

The main thing to be proved, is the date, nature, and extent of the invention made by you.

Yours, respectfully,

HENRY FISHER.

(Care of J. Dennis, jr., Washington, D. C.)

PATENT OFFICE.

In contested cases, the following rules have been established for taking and transmitting evidence:

First. That all statements, declarations, evidence, &c., shall be in writing, setting forth minutely and particularly the point or points at issue, and shall be verified by oath or affirmation.

Second. That all statements, declarations, proofs, and evidence, shall be filed in the Patent Office, by the parties respectively, before the day of hearing.

Third. That before the deposition of a witness or witnesses be taken by either party, notice should be given to the opposite party of the time and place when and where such deposition or depositions will be taken, so that the opposite party, either in person or by attorney, shall have full opportunity to cross-examine the witness or witnesses.

And such notice shall, with proof of service of the same, be attached to the deposition or depositions, whether the party cross-examine or not; and such notice shall be given in sufficient time for the appearance of the opposite party, and for the transmission of the evidence to the Patent Office before the day of hearing.

Fourth. That all evidence, &c., shall be sealed and addressed to
738 the Commissioner of Patents, by the persons before whom it shall be taken, and so certified thereon.

Fifth. That the certificate of the magistrate taking the evidence shall be substantially in the following form, and written upon the envelope, viz:

"I hereby certify that the depositions of A B C D, &c., in the matter of interference between E F and G H, were taken, sealed up, and addressed to the Commissioner of Patents by me.

"A B,

"*Justice of the Peace.*"

Sixth. In cases of application for extension where no opposition is made, ex-parte testimony will be received from the applicants; and such testimony as may have been taken by the applicants, prior to notice of opposition, shall be received, provided, the applicant shall give prompt notice to the opposing party or parties of the names and residences of the witnesses whose testimony has been thus taken.

Seventh. That no evidence, statements, or declaration touching the matter at issue will be considered upon the said day of hearing which shall not have been taken and filed in compliance with these rules: Provided that, if either party shall be unable, for good and sufficient reasons, to procure the testimony of a witness or witnesses within the stipulated time, then it shall be the duty of said party to give notice of the same to the Commissioner of Patents, accompanied by statements under oath, of the cause of such inability and of the steps which have been taken to procure said testimony, and of the time or times when efforts have been made to procure it; which last-mentioned notice to the Commissioner shall be received by him previous to the day of hearing aforesaid.

739 PATENT OFFICE,
Washington, June 24th, 1863.

SIR: You are hereby informed that in case of the interference between your claims and those of D. J. Powers, for alleged improvements in harvesting machines, upon which a hearing was appointed to take place on the fourth Monday in June, 1863, the question of priority of invention has been decided by the examiner in your favor. Should there not be an appeal from this decision within the ensuing thirty days, a patent will be granted to you.

The testimony is now open for inspection, and you can have a copy of the decision on payments of the usual fees of the office.

Yours, respectfully,

COMMISSIONER OF PATENTS.

HENRY FISHER,
(Care of J. Dennis, jr., Washington, D. C.)

31 W.] U. S. PATENT OFFICE, *July 31st*, 1863.

SIR: No appeal having been taken from the decision of 27' ult., in the matter of interference between your harvester appl'n and that of D. J. Powers, your appl'n has been taken up for examination, and it is found that your first, third, and fifth clauses of claim are anticipated in numerous instances. As examples, you are referred to the patents of S. A. Lindsay, August 2d, 1859; Fitzhugh & Young, September 6th, 1859; Reese, Gould & Lake, November 5th, 1861, and J. H. Mears, March 4th, 1862, and appl'n of August & Andes, rejected October 26th, 1860. The fourth clause will require the modification noted in
740 pencil, in view of the patents of Fitzhugh & Young, cited, that of D. Ranck, March 1st, 1859, and others. The second clause is not objected to as now advised.

Respectfully, &c.,

Spec'n enclosed.
HENRY FISHER, ap'n, &c.,
(Care of J. Dennis, jr., Washington, D. C.)
A. M. S. 16.

To the COMMISSIONER OF PATENTS:

SIR: Your letter of 31st July, 1863, was duly received, and I will endeavor to amend my claims as suggested.

That is, erase all the claims, and substitute the following, viz:

(* I claim, in combination with the stationary bowl or cam M, arranged as described, extending the rake-head back behind its fulcrum, so as to raise and control the rotating rake by the action of the cam-way on its heel or rear end, substantially as described.

In combination with the rake, I claim the curved arm on the side of the rake to push the grain down in advance of the rake, and insure its being cut before the rake shall move it on the platform.)

Which amendments I hope will make it satisfactory, and I return all the papers, and hope you will order it to issue at your earliest convenience.

Respectfully, &c.,

HENRY FISHER,
By his attorney, J. DENNIS.

WASHINGTON, 12 *mo.*, 15*th*, 1863.

Amendments filed Dec. 16th, 1863. A. M. S.

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* A insert.

741 UNITED STATES PATENT OFFICE,
Washington City, D. C., December 17th, 1863.

SIR: You are hereby notified that your application for a patent for an alleged improvement in harvesters has been adjudged to interfere with a similar application of Adam R. Reese, of Phillipsburgh, Warren County, N. J., for whom Wm. D. Baldwin, esq., of Washington, D. C., is attorney , who has been notified thereof. A hearing will be granted to the parties on the first Monday in March next.

The testimony must be closed on the Monday preceding the day of hearing. The arguments of counsel must be filed in the office on the day of hearing.

Further time for filing arguments can only be granted on application of counsel sustained by sufficient affidavits, in conformity with the provisions of the act of July 4th, 1836. The testimony must be in conformity with the enclosed rules, under the oath or affirmation of persons who are not interested in the question at issue. The main thing to be proved is the date, nature, and extent of the invention made by you.

Yours, respectfully,

Messrs. FISHER, WHITELEY, FUSSLER & KELLY,
Assignee of HENRY FISHER,
Care of J. Dennis, Jr., Washington, D. C.

PATENT OFFICE.

In contested cases the following rules have been established for taking and transmitting evidence:

First. That all statements, declarations, &c., shall be in writing, setting forth minutely and particularly the point or points at issue, and shall be verified by oath or affirmation.

Second. That all statements, declarations, proofs, and evidence shall be filed in the Patent Office, by the parties respectively, before the day of hearing.

742 Third. That before the deposition of a witness or witnesses be taken by either party notice should be given to the opposite party of the time and place, when and where such deposition or depositions will be taken; so that the opposite party, either in person or by attorney, shall have full opportunity to cross-examine the witness or witnesses. And such notice shall, with proof of service of the same, be attached to the deposition or depositions, whether the party cross-examine or not; and such notice shall be given in sufficient time for the appearance of the opposite party, and for the transmission of the evidence to the Patent Office before the day of hearing.

Fourth. That all evidence, &c., shall be sealed and addressed to the Commissioner of Patents by the persons before whom it shall be taken, and so certified thereon.

Fifth. That the certificate of the magistrate taking the evidence shall be substantially in the following form, and written upon the envelope, viz:

"I hereby certify that the depositions of A, B, C, D, &c., in the matter of interference between E F and G H, were taken, sealed up, and addressed to the Commissioner of Patents by me.

"A B,
"*Justice of the Peace.*"

Sixth. In cases of application for extension, where no opposition is made, ex parte testimony will be received from the applicants, and such testimony as may have been taken by the applicants, prior to notice of opposition, shall be received, provided the applicants shall give prompt notice to the opposing party or parties of the names and evidences of the witnesses whose testimony has been thus taken.

Seventh. That no evidence, statements, or declaration touching the matter at issue will be considered upon the said day of hearing which shall not have been taken and filed in compliance with these
743 rules, provided that if either party shall be unable, for good and sufficient reasons, to procure the testimony of a witness or witnesses within the stipulated time, then it shall be the duty of said party to give notice of the same to the Commissioner of Patents, accompanied by statements, under oath, of the cause of such inability, and of the steps which have been taken to procure said testimony, and of the time or times when efforts have been made to procure it, which last-mentioned notice to the Commissioner shall be received by him previous to the day of hearing aforesaid.

U. S. PATENT OFFICE, *Dec.* 31, 1863.

SIR: The interference declared 17th inst., between the applications of A. R. Reese and Messrs. Fisher, Whiteley, Tassler & Kelly, for alleged improvements in harvesters, is hereby dissolved at the request of the counsel for Reese.

Respectfully, &c.,

Messrs. FISHER, WHITELEY, et al.,
Assignees of H. Fisher.
Care J. Dennis, Jr., Washington, D. C.
[A. M. S. 16.

No. 41,411. Page

Henry Fisher, assignor to himself, Wm. M. Whitely, Jerome Tassler, and Oliver S. Kelly, of Springfield, O.
Of Alliance, county of Starke, State of Ohio.

HARVESTERS.

Received March 20th, 1863.
Petition, March 20th, 1863.
744 Affidavits, March 20th, 1863.
Specification, March 20th, 1863.
2 drawings, March 20th, 1863.
Model, March 20th, 1863.
Cert. dep.
1. cash, $15; March 20th, 1863.
Add'l fee, cert.
1 add'l cash, $20, January 14th, 1864.
Examined Chas G. Page, December 31st, 1863.
2 issue, Hayes, January 4th, 1864.
4 patented, January 20th, 1864.
Recorded vol. 157, page 735.
Circular, January 4th, 1864.

J. DENNIS, Jr., *Present.*

Interference declared with application of D. J. Powers, March 28th, 1863.

Day of hearing, fourth Monday in June.

Interference decided in favor of Fisher; thirty days allowed for appeal; Hartie notified June 27th, 1863.

Specification returned July 31st, 1863.

Interference declared Dec. 17th, 1863, with application of A. R. Reese.

Hearing, first Monday in March, 1864.

Interference dissolved, Dec. 31st, 1865.

Ex'd K. M. S.

7 *Defendants' Exhibit, A. R. Reese patent of* 1866.

The United States of America to all to whom these letters patent shall come:

Whereas Adam R. Reese, of Philljpsburgh, New Jersey, has alleged that he has invented a new and useful improvement in harvester rakes, which he states has not been known or used before his application, has made oath that he is a citizen of the United States; that he does verily believe that he is the original and first inventor or discoverer of the said improvement, and that the same hath not, to the best of his knowledge and belief, been previously known or used, has paid into the Treasury of the United States the sum of thirty-five dollars and presented a petition to the Commissioner of Patents, signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose.

These are therefore to grant, according to law, to the said Adam R. Reese, his heirs, administrators, or assigns, for the term of seventeen years from the first day of May, one thousand eight hundred and sixty-six, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said Adam R. Reese in the schedule hereunto annexed, and is made part of these presents.

In testimony whereof I have caused these letters to be made patent, and the seal of the Patent-Office has been hereunto affixed.

Given under my hand at the city of Washington, this first day of May, in the year of our Lord one thousand eight hundred and sixty-six, and of the Independence of the United States of America the nine*teenth*.

W. T. OTTO,
Acting Secretary of the Interior.

Countersigned and sealed with the seal of the Patent-Office.
[L. S.] T. C. THEAKER,
Commissioner of Patents.

746 The schedule referred to in these letters patent, and making part of the same.

To all whom it may concern:

Be it known that I, Adam R. Reese, of Phillipsburgh, in the county of Warren and State of New Jersey, have invented certain new and useful improvements in harvesters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which make part of this specification, and in which—

Figure 1 represents a view, in elevation, of a two-wheeled hinge-joint mowing machine, with my improvements applied thereto.

Fig. 2, a similar view of the same as seen from the divider side thereof, with the finger-beam and platform removed; and

Fig. 3, a plan or top view of the machine.

My invention relates to that class of two-wheeled hinge-joint harvesters in which a series of arms revolving on a vertical axis, or one nearly so, and so arranged as to conform to the undulations of the platform, and to serve the purposes both of a reel and of a rake; and its object is so to arrange the mechanism as to permit a driver to ride on the machine without danger of being struck by the rake; to which end the improvement herein claimed consists.

In combining with a two-wheeled hinge-joint harvester a combined reel and rake consisting of a series of arms revolving on a vertical axis, or one nearly so, mounted upon the finger-beam or platform, so as to conform to the undulations of the platform, and driven from the main frame, said rake-arms being so controlled by a guide-cam as to be nearly vertical when passing over the main frame, whereby I am ena-
747 bled to locate the driver's seat upon the main frame outside of the path described by the rake, and thus avoid all danger of striking him, substantially as hereinafter described.

My invention further consists in an x-shaped tubular frame, for connecting, bracing, and supporting the rake and finger-beam, as hereinafter described.

In the accompanying drawings my improvements are shown as applied to a "Ball mowing machine," (which is one of the class known as "hinge-joint harvesters") for the purpose of adapting it both to reaping and gathering grain.

The main frame A rests upon two supporting and driving wheels B B^1, keyed upon and ordinarily turning with the same axle B^2.

The finger-beam C and platform D are hinged to the frame in the usual way, by means of a drag-bar, E, and coupling-arm or link F. The outer or grain end of the platform is supported by a small wheel, *d*.

The raking mechanism is mounted in a frame consisting of a piece of wrought-iron pipe C, having a foot or socket, *g*, of cast or wrought iron, bolted to the inner end of the finger-beam. A small piece of pipe, G^1, crosses this standard G nearly at right angles thereto, and so as to lie horizontal, or nearly so, and is strongly bolted thereto near its middle. Its inner end is secured to the finger-beam by a bar g^1, while its outer end carries a step, g^2, in which the foot of the rake-shaft or spindle H turns. The spindle likewise turns near its upper end in a bearing g^3, in the upper end of the rake-post G. By this mode of construction a strong, light, and rigid support is secured for the rake.

Four cross-arms, I, are secured upon and turn with the spindle H. The rake-arms J are pivoted or hinged near their inner ends to the outer ends of these cross-arms, in such manner as to vibrate freely in a vertical plane, while their inner ends carry friction-rollers *j*, which run in the grooves of an eccentrically-curved stationary cam-ring, K, secured upon the post G by a set-screw, K, which renders the cam-ring adjustable vertically upon the post.

748 A stop-pin, j^1, is mounted on the inner end of each of the levers J (although only one is shown in the drawing), and a plate-spring, j^2, is likewise interposed between the inner ends of these levers and the cross-arms I. When the rake is sweeping over the platform the stop-pin j^1 bears against the front side of cross-arms, and thus prevents the pivots of the rake-arms from being strained. The spring j^2 is for

the purpose of assisting the rake to rise the moment it has finished sweeping the grain off the platform (the cam-ring being suitably curved at the proper point for this purpose), and thus prevent dragging or scattering the gavels.

In the drawings, only one of the rake-heads L is shown as having teeth; one rake is generally sufficient, and I prefer to leave the other heads without teeth, as, when thus arranged, they act as reel-ribs to press the standing grain back upon the platform, but not to rake it off. The teeth may, however, be inserted in as many of the heads as desired.

As the main frame A, on which the driving-gearing is mounted, always maintains a fixed relation to the ground, while the finger-beam, platform, and rake rise and fall in conformity to the undulations of its surface, it becomes necessary to devise some means for driving the rake uniformly in whatever position it may assume. To do this I mount a sprocket-wheel, H^1, upon the rake-spindle, and drive the rake by a chain encircling the sprocket-wheel, and a corresponding pulley, B^3, on the driving axle B^2. In my early experiments with my rake, I encountered much difficulty from the slipping of the chain. I therefore devised the following method of driving the rake with a slack chain, and without liability to slip.

I employ a common trace-chain, M, with straight links, and, instead of pins on the sprocket-wheel, form a deep groove longitudinally in the periphery of the wheel for one side of the links to enter, and also divide it transversely into cells of a size correspoding to that of the links.

The driving-pulley B^3 is constructed in a similar manner, and
749 thrown into and out of gear by a sliding clutch, operated by a foot-lever, *b*, extending forward to a point near the driver's seat, as shown in Fig. 3. By this mode of construction of the chain-pulleys, one side of the chain M is always kept taut, while the other side runs slack, as shown in Fig 3, so that an increase of several inches in the length of the chain will not in the least effect the working of the rake. The chain passes over a spring guide, *m*, just before encircling the sprocket-wheel H^1, which prevents it from slipping off or dropping below the wheel.

A seat, N, for the driver is mounted upon the frame A; when used as a reaper this seat is located on the front of the frame near the rear end of the tongue, where, as shown in Fig. 2 of the drawings, the driver is out of the way of the rake, and so located as to aid materially in counterbalancing its weight. When used as a mower, the rake and platform are, of course, removed, and the driver's seat is then shifted to the position shown by the red lines in Fig. 2, to counterbalance the weight of the tongue.

To prevent the finger-beam and rake from falling too low, I mount a stop, O, upon the rear of the main frame, between the driving wheels, as shown in Fig. 1. The horizontal arm G' rests upon this stop, and prevents any further descent of the finger-beam; but leaves it free to rise. This stop can be adjusted vertically by means of a set-screw and ratchet-plates O'.

This stop, moreover, performs another very important function, viz: that of supporting the weight of the finger-beam, platform, and raking mechanism at a point between the driving-wheels, instead of outside of them, by which means the balance of the machine, laterally, is preserved, and the side draft diminished.

The cutters are driven by internally geared spur-wheels, P, on the driving-wheels, meshing into spur-pinions, Q, on the counter shaft R, which carries a bevel-wheel, S, driving a corresponding pinion, T, on the crank-shaft U. The spur-pinions have backing ratchets on them,

750 as usual in mowing machines of this class, to prevent the cutters from working when backing.

When mowing, both wheels are used as drivers; this plan, however, does not answer with my rake. The driving-wheels are ordinarily keyed fast to and turn with the axle, but when raking, I remove the key from the outer wheel B, in order that it may run loosely on the axle and not turn the rake when the cutters are not working, as this would cause it to comb the grain down upon the platform without its first being severed.

My machine, when mowing, operates just like the ordinary "Ball mower," and no description of it is, therefore, required here. To adapt it to raking, the driver's seat N is moved forward from the position shown by the red lines in Figs. 2 and 3, to the position shown in blue. The platform and raking mechanism are then attached. As the machine advances the rake-arms rise and fall, and sweep over the platform in their proper relations, being controlled in their movements by the guide or cam ring K.

By reference to the drawings it will be seen that while passing over the main frame these rake-heads and blank arms are vertical; and, that the driver's seat is outside of the path described by them, thus avoiding all danger of striking the driver, and even to cause them to revolve without passing over his head, and at the same time use a small cam or guide.

My invention likewise enables me to use a finger-beam capable of conforming freely to the undulations of the ground, and an automatic rake which always maintains its proper relation to the platform, can play freely up and down, with respect to the main frame, and yet, can be driven from it uninterruptedly and without straining or bending the gearing, while the weight of the raking mechanism is supported between the main wheels, and the driver is permitted to ride on the machine, not only without danger of being struck by the rake, but

751 in a position where his weight is of material assistance in counterbalancing the weight of the raking mechanism.

What I claim as my invention, and desire to secure by letters patent, is:

The combination, in a two-wheeled hinge-joint harvester, of the vertical rake-shaft, mounted upon the finger-beam and driven from the main frame with the cam-ring and rake-arms, when arranged and operating as described, whereby I am enabled to locate the driver's seat outside of the path described by the rake-arms, as set forth.

I also claim the combination of the finger-beam and main frame with the tubular X-shaped frame G G′, as described, for the purpose of supporting and bracing the rake-shaft.

In testimony whereof I have subscribed my name.

ADAM R. REESE.

Witnesses:
WM. A. HUFF.
LOUIS M. TEEL.

Ex'd E. A. M., E. H. R.

Defendants' Exhibit, Whitemack Patent, No. 31345.

Certificate.

The United States of America, to all to whom these letters patent shall come:

Whereas Thomas S. Whitemack, of Easton, Pennsylvania, has al-

leged that he has invented a new and useful improvement in rakes for harvesters, which he states has not been known or used before
752 his application; has made oath that he is a citizen of the United States; that he does verily believe that he is the original and first inventor or discoverer of the said improvement, and that the same hath not, to the best of his knowledge and belief, been previously known or used; has paid into the Treasury of the United States the sum of thirty dollars, and presented a petition to the Commissioner of Patents, signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose:

These are therefore to grant, according to law, to the said Thomas S. Whitemack, his heirs, administrators, or assigns, for the term of fourteen years from the fifth day of February, one thousand eight hundred and sixty-one, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said Thomas S. Whitemack in the schedule hereunto annexed, and is made part of these presents.

In testimony whereof I have caused these letters to be made patent, and the seal of the Patent Office has hereunto been affixed.

Given under my hand, at the city of Washington, this fifth day of February, in the year of our Lord one thousand eight hundred and sixty-one, and of the Independence of the United States of America the eighty-fifth.

MOSES KELLY,
Acting Secretary of the Interior.

Countersigned, and sealed with the seal of the Patent Office.
[SEAL.]
S. T. SHUGERT,
Commissioner of Patents.

753 The schedule referred to in these letters patent and making part of the same.

To all whom it may concern:

Be it known that I, T. S. Whitenack, of Easton, in the county of Northampton, and State of Pennsylvania, have invented a new and improved raking device for harvesters; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings making a part of this specification, in which—

Figure 1 is a side sectional view of my invention, taken in the line *x x*, figure 3.

Figure 2 a back sectional view of ditto, taken in the line *y y*, figure 3.

Figure 3 a plan or top view of ditto.

Figure 4 a side sectional view of ditto, taken in the same line as figure 1, but showing a different arrangement of the parts.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to certain improvements in that class of raking attachments for harvesters, in which the rake and beaters in passing over the platform describe the arc of a circle in a horizontal plane. The object of the within-described invention is to apply this class of raking device to the machine in such a way as to admit of the use of a driver's seat on the machine, and also to admit of the regulating of the

rake and beaters as regards the height of their movement over the platform, and the perfect adaptation of the former to the latter as circumstances may require.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it:

A represents the main frame of the machine, which may be constructed in any proper way, and B is a platform, which is of sector form, and secured to the back part of the main frame. C is the
754 driving-wheel, which is placed in the main frame, and D is a vertical shaft, which is placed in the main frame, and is rotated by suitable gearing or belts, either or both from the driving-wheel.

On the upper end of the shaft D there is placed or secured a metallic head or socket E, provided with radial recesses to receive the ends of arms F, which are secured in the head by pins, *a*, the arms being allowed to work, or to rise and fall, in vertical planes on their pins, *a*. To the under side of each arm, F, at its inner part, there is attached a slide, G; these slides have their inner ends bent or curved down, as shown at *b*, to form bearing surfaces for the arms; the ends, *b*, resting against the lower part, *c*, of the head or socket, E, as shown clearly in figure 2. The slides, G, may be secured at any desired point by bolts, *d*, and the adjustment of the slides G prevent them from descending below a certain height, which may be made greater or less. This adjustment of the arms, F, may also be regulated by passing the pins *a* through the arms F at higher or lower points; two or more holes, *e*, being made for the reception of each pin, *a*, either hole being used as desired. (See figure 4.)

To each arm, F, there is attached transversely a shoe, H; these shoes are curved upward at their front ends, and work over rollers I I′ I″, which are attached to a suitable framing, *f*, on the main frame A. The roller, I, it will be seen, is in a vertical position; the roller I′ is slightly inclined, and the roller I″ inclined in a greater degree.

The rollers I I′ I″ elevate the arms F as they rotate, and after leaving the platform B and the roller I″ incline the arms as they pass around over the front part of the main frame, so that the driver's seat may be placed thereon, and the rake and beaters made to clear the driver. This result, so far as I am aware, is not obtained by other raking attachments of the class to which this invention relates.

To the outer end of each arm, F, there is attached a metal socket, J, which receive the rake, K, and beaters, L. The rake K may
755 be constructed in the usual or in any proper way, and the beaters L are simply bars of straight form. The sockets J may be described as being formed each of a flat plate, *a**, having two holes made through it, one, *g*, of which is curved, and of sufficient length to admit of a vertical adjustment of the plate. (See figures 2 and 4.)

At the lower part of the plate there are two flanches, *h h*, between which the beaters L are placed and secured by a bolt, *i*, the latter passing through the oblong slots *j* (See Fig. 4.) The flanches *h h*, have a position somewhat oblique with the plates; the obliquity being such that the beaters L and rake K will have a position in the same plane with the front end of the platform as they commence to pass over it. (See Fig. 3.)

This is important, for if the beaters, which serve the purpose of a reel, do not act upon the standing grain in the same plane with the front edge of the platform their action will be imperfect. The arms F are made to pass over the platform B in a more or less inclined position, by adjusting the slide G, as previously explained, and the beaters L are

adjusted parallel with the platform B, or in a horizontal position, by adjusting the plates a^*, of the sockets J, the holes or slots g of each plate admitting of such adjustment.

The adjustment of the arms F of the beaters, is necessary in order that the beaters be adjusted to strike the grain higher or lower according to the height of the latter, for if tall grain be struck by the beaters at a low point, the beaters will have a tendency to throw the top of the grain backwards off from instead of on or towards the platform.

This difference in the height of the beaters L, involves the necessity of a longitudinal adjustment of the beaters in order that the outer ends of the latter may pass within the guard M of the platform B, at all points of their adjustment.

The longitudinal adjustment of the beaters L, is effected by means of the slots j, through which the bolts i pass.

756 To the inner side of the main frame A there is attached a lever N, the back end of which has uprights k secured to it, which support a curved bar l, over which the arms F rotate.

The driver at any time by depressing the front end of lever N, and thereby elevating its back end and bar l, will cause the beaters and rake to pass over the platform at a considerable elevation, so as to be inoperative so far as any action on the grain is concerned.

This is important, for in certain cases, where the grain is light it may be only necessary for the rake to sweep the platform and rake the grain therefrom at every alternate revolution only.

The rake K, it will be understood, may be adjusted in precisely the same way as the beaters.

Having thus described my invention, what I claim as new, and desire to secure by letters patent is:

First. The employment or use of the slides G when applied to the arms F, substantially as shown for the adjustment of the same, as set forth.

Second. The rollers I I′ I″ when applied to the main frame A, and used in connection with the arms F, to operate as and for the purpose set forth.

Third. Attaching the beaters I and rake K to the arms F by means of the sockets J, constructed and arranged as shown, to admit of the adjustment of the beaters and rake, specifically as set forth.

Fourth. In combination with the arms F, the lever N attached to the main frame A, and provided with the curved bar l, placed in such relation with the arms to operate as and for the purpose set forth.

THOS. S. WHITENACK.

Witnesses:
CHARLES MCINTIRE.
P. P. VAN AISDALE.

757 *Defendants' Exhibit, Whitenack File.*

Certificate. Petition.

To the Commissioner of patents:

The petition of T. S. Whitenack, of Easton, in the county of Northampton, and State of Pennsylvania, respectfully requests:

That your petitioner has invented a new and improved raking device for harvesters, which he verily believes has not been known or used prior to the invention thereof by your petitioner. He therefore prays

that letters patent of the United States may be granted to him therefor, vesting in him and his legal representatives the exclusive right to the same, upon the terms and conditions expressed in the act of Congress in that case made and provided, he having paid thirty dollars into the treasury and otherwise complied with the requirements of said act. And he hereby authorizes O. D. Dunn, S. H. Wales and A. E. Beach, of the firm of Munn & Co., or their accredited agents, to act as his attorneys in presenting the application and in making all such alterations and amendments as may be required, and also to sign his name to the drawings.

THOMAS S. WHITENACK.

Oath.

COUNTY OF WARREN:
State of New York, ss:

On this twenty-fifth day of December, 1860, before the subscriber, justice of the peace in and for said county, personally appeared the within-named T. S. Whitenack, and made solemn oath that he verily believes himself to be the original and first inventor of the with-
758 in-described improved raking device for harvesters, and that he does not know or believe the same was ever before known or used; and that he is a citizen of the United States.

JOHN S. BACK,
Justice of the Peace in and for the County of Warren and State of New Jersey.

To all whom it may concern:

Be it known that I, T. S. Whitenack, of Easton, in the county of Northampton and State of Pennsylvania, have invented a new and improved raking device for harvesters; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a side sectional view of my invention taken in the line *x x*, figure 3.

Figure 2, a back sectional view of ditto, taken in the line *y y*, figure 3.

Figure 3, a plan or top view of ditto.

Figure 4, a side sectional view of ditto, taken in the same line as figure 1, but showing a different arrangement of the parts.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to certain improvements in that class of raking attachments for harvesters, in which the rake and beaters in passing over the platform describe the arc of a circle in a horizontal plane. The object of the within-described invention is to apply this class of raking device to the machine in such a way as to admit of the use of a driver's seat in the machine, and also to admit of the regulating of the rake and beaters as regards the height of their movement over the platform and the perfect adaptation of the former to the latter
759 as circumstances may require. To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents the main frame of the machine, which may be constructed in any proper way, and B is a platform, which is of sector

form and secured to the back part of the main frame. C is the driving-wheel, which is placed in the main frame, and D is a vertical shaft, which is placed in the main frame, and is rotated by suitable gearing or belts, either or both, from the driving-wheel.

On the upper end of the shaft D there is placed or secured a metallic head or socket, E, provided with radial recesses to receive the ends of arms F, which are secured in the head by pins *a*, the arms being allowed to work or to rise and fall in vertical planes on their pins *a*.

To the under side of each arm F, at its inner part, there is attached a slide, G. These slides have their inner ends bent or curved down, as shown at *b*, to form bearing-surfaces for the arms, the ends *b* resting against the lower part, *c*, of the head or socket E, as shown clearly in figure 2. The slides G may be secured at any desired point by bolts *d*, and the adjustment of the slides C prevent them from descending below a certain height, which may be made greater or less. This adjustment of the arms F may also be regulated by passing the pins *a* through the arms F at higher or lower points, two or more holes, *e*, being made for the reception of each pin *a*, either hole being used as desired. (See figure 4.) To each arm F there is attached transversely a shoe, H. These shoes are curved upward at their front ends, and work over I I′ I″, which are attached to a suitable framing, *f*, on the main frame A. The roller I, it will be seen, is in a vertical position, the roller I′ is slightly inclined, and the roller I″ inclined in a greater degree.

The rollers I I′ I″ elevate the arms F as they rotate, and after leaving the platform B and the roller I″ incline the arms as they pass around over the front part of the main frame, so that the driver's seat
760 may be placed thereon and the rake and beaters made to clear the driver. This result, so far as I am aware, is not obtained by other raking attachments of the class to which this invention relates.

To the outer end of each arm F there is attached a metal socket, J, which receive the rake K and beaters L. The rake K may be constructed in the usual or in any proper way, and the beaters L are simply bars of straight form.

The sockets J may be described as being formed each of a flat plate, *a**, having two holes made through it, one, *g*, of which is curved and of sufficient length to admit of a vertical adjustment of the plate. (See figures 2 and 4.)

A' the lower part of the plate there are two flanches, *h h*, between "which" the beaters L are placed and secured by a bolt, *i*, the latter passing through oblong slots J. (See figure 4.) The flanches *h h* have a position somewhat oblique with the plates, the obliquity being such that the beaters L and rake K will have a position in the same plane with the front end of the platform as they commence to pass over it. (See figure 3.)

This is important, for if the beaters which serve the purpose of a reel do not act upon the standing grain in the same plane with the front edge of the platform, their action will be imperfect. The arms F are made to pass over the platform B in a more or less inclined position by adjusting the slides G, as previously explained, and the beaters L are adjusted parallel with the platform B, or in a horizontal position, by adjusting the plates *a** of the socket J, the holes or slots *g* of each plate admitting of such adjustment.

The adjustment of the arms F of the beaters is necessary in order that the beaters be adjusted to strike the grain higher or lower, accord-

ing to the height of the latter; for if tall grain be struck by the beaters at a low point, the beaters will have a tendency to throw the top of the grain backward, off from instead of on or towards the platform.

761 This difference in the height of the beaters L involves the necessity of a longitudinal adjustment of the beaters, in order that the outer ends of the latter may pass within the guard M of the platform B at all points of their adjustment. The longitudinal adjustment of the beaters L is effected by means of the slots *j*, through which the bolts *i* pass.

To the inner side of the main frame A there is attached a lever, N, the back end of which has uprights *k* secured to it, which support a curved bar, *v*, over which the arms F rotate. The driver at any time, by depressing the front end of lever N and thereby elevating its back end and bar *v*, will cause the beaters and rake to pass over the platform at a considerable elevation, so as to be inoperative so far as any action on the grain is concerned.

This is important, for in certain cases where the grain is light it may be only necessary for the rake to sweep the platform, and rake the grain therefrom at every alternate revolution only.

The rake K, it will be understood, may be adjusted in precisely the same way as the beaters.

Having thus described my invention, what I claim as new, and desire to secure by letters patent, is—

[*First. The employment or use of the arms F, hinged or connected by joints to a rotating head, E, so that said arms may rise and fall and be adjusted independently of each other in vertical planes, substantially as and for the purpose set forth.]

First. The employment or use of the slides G when applied to the arms F, substantially as shown, for the adjustment of the same, as set forth.

Second. The rollers I I′ I″, when applied to the main frame A, and used in connection with the arms F, to operate as and for the purpose set forth.

Third. Attaching the beaters L and rake K to the arms F by means of the sockets J, constructed and arranged as shown, to admit of the adjustment of the beaters and rake, specifically as set forth.

762 Fourth. In combination with the arms F, the lever N, attached to the main frame A, and provided with the curved bar V, placed in such relation with the arms, to operate as and for the purpose set forth.

THOS. S. WHITENACK.

Witnesses:
CHARLES MCINTRE,
P. P. VAN AUSDALE.

U. S. PATENT-OFFICE, *January 7th*, 1861.

SIR: Your application for letters patent for alleged improvements in the raking attachment to harvesters has been examined, and the specification is returned to you herewith for amendment.

The first clause of the claim is distinctly anticipated in the patents of S. Lindsay, August 2d, 1859, and A. Pritz, December 4th, 1860. The

*Erase in original.

remaining clauses of the claim, as at present advised, the office will allow.

Respectfully, &c.

THOS. S. WHITEMACK,
Care of MUNN & CO.,
New York.

A. M. S.

The specification of T. S. Whitenack, raking device for harvesters, is hereby amended by striking out the first clause of the claim, commencing with the fifth and ending with the thirteenth line on page 9; also, by substituting for the ordinals second, third, fourth, and fifth, at the commencement of the fourteenth, nineteenth, and twenty-fourth
763 lines on page 9, and at the commencement of the fourth line on page 10, the ordinals first, second, third, and fourth.

T. S. WHITENACK,
Per MUNN & CO., *Attorneys.*

NEW YORK, *January 14th*, 1861.
Amendment filed January 16th, 1861.

OFFICE OF THE SCIENTIFIC AMERICAN,
No. 37 Park Row, New York, January 15th, 1861.

Hon. Commissioner of Patents:

SIR: We herewith return the specification of T. S. Whitemack's improvement in raking devices for harvesters, having amended the same in accordance with the suggestions of the office.

Respectfully, your ob't serv't's,

MUNN & CO.

Revision No. 334.

UNITED STATES PATENT-OFFICE,
Washington, Jan'y 23d, 1861.

SIR: Having examined the application of T. S. Whitenack for improvement in rakes for harvesters, we approve the action of the examiner having charge of the case, and recommend that a patent be allowed accordingly.

Respectfully submitted,

WM. B. TAYLOR,
T. R. PEALE,
Revising Examiners.

Hon. S. T. SHUGERT,
Acting Commissioner of Patents.

764 U. S. PATENT OFFICE, *January 23d*, 1861.

The above report is approved and a patent allowed.

S. T. SHUGERT,
For Commissioner.

No. 341. Whole No. 31345.

THOMAS S. WHITEMACK, of Easton, county of Northampton, State of Pennsylvania.

RAKE FOR HARVESTERS.

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Revised and approved January 23d, 1861.

MUNN & CO., *N. Y.*

765 *Defendants' Exhibit, Marsh Patent*, 1863.—SAMUEL E. CAVIN, *Notary Public and Special Examiner.*

HOFFHEINS
vs.
RUSSELL.

No. 37630.

The United States of America to all to whom these letters patent shall come:

Whereas James S. Marsh, of Lewisburg, Pennsylvania, has alleged that he has invented a new and useful improvement in harvesters, which he states has not been known or used before his application; has made oath that he is a citizen of the United States, that he does verily believe that he is the original and first inventor or discoverer of the said improvement, and that the same hath not, to the best of his knowledge and belief, been previously known or used; has paid into the Treasury of the United States the sum of thirty-five dollars, and presented a petition to the Commissioners of Patents signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose:

These are, therefor', to grant, according to law, to the said James S. Marsh, his heirs, administrators, or assigns, for the term of seventeen years from the tenth day of February, one thousand eight hundred and sixty-three, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said James S. Marsh, in the schedule hereunto annexed, and is made part of these presents.

766 In testimony whereof I have caused these letters to be made patent, and the seal of the Patent Office has been hereunto affixed.

Given under my hand, at the city of Washington, this tenth day of February, in the year of our Lord one thousand eight hundred and sixty-three, and of the Independence of the United States of America the eighty-seventh.

J. P. USHER,
Secretary of the Interior.

Countersigned and sealed with the seal of the Patent Office.
[SEAL.] D. P. HOLLOWAY,
Commissioner of Patents.

The schedule referred to in these letters patent and making part of the same.

To all whom it may concern:

Be it known that I, James S. Marsh, of Lewisburg, in the county of Union and State of Pennsylvania, have invented certain new and useful improvements in harvesters, and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Fig. 1 is a perspective view;

Fig. 2, a transverse section; and

Figs. 3 and 4, details of my improvements in connection with a harvester.

Similar letters of reference in the several figures indicate corresponding parts.

A is the side draught-frame of a harvester; B, the driving-wheel; C, the tongue; D, the finger-beam; E, the platform; F, the outer guard; and G, the small supporting-wheel. The machine is adjusted on the axle of the drive-wheel by means of a castor-wheel, H, and com-
767 pound-lever arrangement, I J. Thus far described, the machine has previously been in use, and I have referred to the parts here in order to facilitate the description of my invention, and to show that the improvements I have made are adjustable with the finger-beam and platform on a draught-frame which has the drive-wheel as its axis of motion, and the cutting apparatus in front of drive-wheel.

My first improvement is a grain-guard, K, made so as to shut and open on a joint or pivot, *a*, and arranged on the front end of the inner beam of the draught-frame A, as shown in Fig. 1 of the drawings. One limb of this guard extends forward on a slightly oblique line, and is not adjustable. From the extreme forward end of this fixed limb another limb extends back far enough to slightly overhang the finger-beam. Near the rear extremity of this second limb a curved arm, *d*, is attached. This arm is perforated with a series of holes, and it extends over the first limb as represented. With this arrangement, the grain, as the machine is operating, is prevented from falling over upon the draught-frame, and the grain is also caused to fall upon the platform at a point away from the inner guard thereof. The extent of distance that the grain falls away from this guard can be regulated at pleasure, by moving the curved arm to the right or left, and inserting a pin in one of its holes. This adjustment of the arm causes the second limb of the guard to have a greater or less obliquity to the path of the machine, and as the obliquity is, so will be the deposit of the grain upon the platform. If the grain is much bent over toward the draught-frame, the obliquity must be great, but, if it is straight, then the obliquity may be slight. This grain-guard, at the point shown, is as essential as the adjustable dividers or guides used on the off side of the machine.

My second improvement is a combined rake and reel and an outer or off side device, which, in connection with the rake, insures a clearing of loose, tangled grain from the divider.

768 My rake is constructed upon a crown-wheel L which has bevel teeth, *e*, on its under side, and four open boxes, *ffff*, on its top arranged around a common tubular centre, G, as represented. The top of the crown-wheel is hollowed out so as to accommodate the lower or pivoted ends of the rake-heads and reel-bars, as

the same rise and fall in the path of a vertical circle while moving with the crown-wheel in the path of a horizontal circle. To the crown-wheel I pivot four curved or bent arms, M M M M′, so that their inner ends rest loose but snugly in the boxes *f*, as shown. One of these arms is provided with a rake-head with teeth, and the others are furnished with straight reel-bars as represented. The arms are linked together in pairs, one pair being independent of the other. The linking devices are designated by the letters *m m′*, the part *m* is slotted, and the part *m′* is furnished with one or more screw-holes, and the respective parts are connected by an eye to staples, *l l*, of the curved arms. Set screws, *n n*, which pass through the slots into the screw-holes of the devices *m m′*, are used to connect the parts of the said devices together, and to adjust the arms of rake-head and reel-bars as occasion may demand. Any other mechanical device, such as a link-nut and two hinged screws, or the equivalent thereof, may be used in place of the devices *m m′*. The arms, M M M M′, are curved as shown, in order that the rake-head and reel-bars may be made short and still sweep the entire width of the platform. The curve insures the descent of the innermost tooth of the rake-head upon grain lying upon the platform, near the innermost front corner thereof. It also allows the arms M M M M′ to assume a perpendicular position, and move by the drive-wheels without interruption therefrom. The rake and reel thus constructed, I locate on the inner side beam of the draught-frame, and over the inner segment box, *o*, of the drive-wheel. To thus locate the rake I prefer to cast the segment box and the vertical shaft of the crown-wheel in one piece, as shown at O P, Fig. 2, and in order to effect this I make
769 a suitable durable bearing, P, and set it in the mould and cast the segment box upon it. The set of the vertical shaft P must be at right angles to the platform, and after I have obtained the lowest adjustment of the platiorm I adopt that as my guide because the other adjustments of the whole machine will either be produced by a movement on the drive-wheel axle or an adjustment of the segment boxes, and in either case the rake will conform to the platform unless the platform warps, in which case the links will serve as a compensating means. The vertical shaft extends through the tubular centre of the crown-wheel, and receives a nut, S, on its tip end. It should here be stated that a small pinion bevel-wheel, Q, is arranged on the drive-wheel shaft, so as to gear with the crown-wheel, as shown. This is fitted loose, but by means of a pin, *p*, is made fast as occasion may require. The pin has a turning movement in one of the arms of the drive-wheel, and is furnished with a lever arm, p^1, so that such movement may easily be imparted to it. The pin also has a sliding movement while it is turning. To produce this latter movement a cam, p^2, is arranged on the drive-wheel in respect to the lever-arm as shown. The cam is a fixture with the drive-wheel, and it, by reason of its inclined or cam edge, p^2, draws the pin out of the hole p^3 of the pinion bevel-wheel, when the lever-arm is moved in contact with said inclined edge. A flat spring, p^4, forces the pin back into the whole p^3 when the lever-arm is moved in a reverse direction. The pin and loose pinion enable me to throw the rake in and out of operation at will.

The rake-head and reel-bars are so linked together, that each linked pair form a right angle, or so that when the rake-head or reel-bar of one pair is horizontal, the fellow thereto is vertical, or nearly so. Now, in order to guide and stay the rake-head and reel-bars in their movements, I arrange a segment of an eliptic cam, R, around and partially over the crown-wheel, L, and the pivoted ends of the rake-head, and

reel-bar arms, as represented. The top edge of this cam is bev-
770 elled as indicated at *r r*, and these bevelled portions terminate in a vertical plane *r*². The bevelled portions are concave on a vertical circle, while the vertical plane portion is concave on a horizontal circle. The highest portion of the cam is that where the vertical plane is located. From this point the cam lowers in height both back and front. The front termination is somewhat lower than the back termination. This cam is bolted firmly to the inner side timber of the draught-frame, as represented in Fig. 1. A clear representation of the cam is shown in Fig. 4.

I have spoken of the pin or shaft P as being vertical, but I do not wish to be understood as limiting myself strictly to a shaft or centre which is only at right angles to a horizontal plane, as the shaft might be set with a slight obliquity. I only refer to it as vertical in contra-distinction to horizontal. From an inspection of the drawing, Fig. 1, the result of my invention will be seen. That result is the impartation of a motion around a vertical shaft to the rake and reel, and at the same time a motion in each of the arms of the rake-head and reel-bars in the path of a vertical circle. The means for accomplishing this result are such that both the reel-bars and the rake-head extend entirely across the platform in sweeping the same, and in leaving the platform they begin gradually to assume a perpendicular position with respect to the platform, and are maintained or supported in this operation by the cam R, and by being thus supported they serve in turn to brace their linked fellows, and hold them firmly in position with respect to the platform, and the grain both in the field and on said platform. Thus I have secured a compact, simple, and firm automatic rake and reel, operating on the most approved principle, and while this is the case I have obviated many objections to that class of rakes which employ arms that overhang the draught-frame and drive-wheels of the harvester. One of the objections to most of the rakes of this class is that of cumbersomeness and extensiveness of sweep beyond the right side of the draft-frame. Another objection is the impossibility of ad-
771 justing them on the drive-wheel axle by the ordinary adjusting lever, while the machine is in motion and from a seat on the draught-frame, that is when the rake is arranged on the one draught-frame, instead of on an auxiliary frame; and even when arranged on a second or auxiliary frame, the adjustment cannot be made from a seat on the machine, unless my invention or the equivalent thereof be adopted.

I think I have effected an important end, in being able to adjust this character of continuously rotating rake by the same devices that adjust the cutting apparatus.

This end I have attained by having the rake a fixture with the draught-frame, and locating it in relation to the drive-wheel, as shown.

The driver's seat S, with my arrangement, can be supported on the draught-frame as indicated at S′, or it may be otherwise located on the same. I, however prefer the arrangement of it in the manner represented, as such arrangement gives the manager a spring seat, and locates him out of the way of danger, and in such a position that if an accident happens he can step upon the ground in a moment.

The device T, on the inner side of the outer guard F, is a horizontal board in form of a half spear, in longitudinal section; it is located high enough on the guard F to just admit the outer ends of the rake-head and reel-bars above it. By this device the ends of the rake and

reel bars are guided or supported, and the tangled grain which hangs on the guard F, is cleared away therefrom by the rake and reels; the falling grain is also directed upon the platform in a more proper manner for the action of outermost rake-teeth upon it.

In the drawing I have shown three reel-bars and one rake-head with teeth in it. The number of bars might be changed, so also might two or more rake-heads be used. This, however depends upon the character of the grain and the speed of the machine. The blank bars bend in the grain to the cutting apparatus, and the rake-toothed bar
772 sweeps the cut grain from the platform. My improvements are applicable to machines with more than one driving-wheel.

I am aware that a single rake-head, with rake-teeth in it, has been arranged to revolve entirely around a vertical centre. I also am aware that rake-arms and reel-bars have been placed around a central hub, and revolved around a centre. I also am aware that such arms and reel bars have been hinged separately to such hub. I also am aware that an elevation and depression of such arms and bars have been effected by a cam. But I am not aware that a rake, operating, constructed, and applied, as I show, has ever been devised, and, therefore, while I do not claim a single rake-arm, revolving around a centre, nor broadly a series of arms arranged upon a central revolving hub, nor a series of such arms hinged separately to the hub, nor all cams for producing the motion of such arms, nor broadly the adjustment of the raking apparatus on the axle of the drive-wheel; I do claim as my invention, and desire to secure by letters patent:

1st. The linking devices described, or their equivalents, applied to the arms of the raking apparatus, substantially as described.

2d. The adaptation of a raking and reeling apparatus combined, which revolves entirely around a vertical centre, for application to the inner side of the draught-frame of a harvester, at a point below the top of the drive-wheel, substantially as and for the purpose set forth.

3d. The use of the inner bearing of the drive-wheel as the support of the centre on which the combined rake and reel revolves, substantially as described.

4th. The construction of the shaft or centre P, of the rake and reel, and the inner segment of the drive-wheel, in one piece, in the manner described.

5th. The combination of the cam R, hinged rake, and reel-bars, and adjustable links, so as to keep the rake and reel bars firmly in contact with the grain in the field and on the platform, substantially as set forth.

773 6th. The arrangement of the sliding and turning spring-pin p, incline p^2, loose bevel-pinion, Q, and the raking and reeling apparatus, substantially as described.

7th. The adjustable grain guard K, constructed substantially as described, and applied to the inner front corner of the draught-frame, for the purpose set forth.

JAMES S. MARSH.

Witnesses:
CHAS. C. SHORKLEY,
PETER BEARVER.

Ex. J. A. W., C. L. E.

Defendants' Exhibit, Hoffheins' Patent, No. 48557.—S. E. CAVIN, *notary public and special examiner.*

HOFFHEINS
vs.
RUSSELL.

No. 48557.

The United States of America to all to whom these letters patent shall come:

Whereas R. Hoffheins, of Dover, Pennsylvania, has alleged that he has invented a new and useful improvement in combined rake and reel attachment to harvesters, which, he states, has not been known or used before his application; has made oath that he is a citizen of the United States; that he does verily believe that he is the original and first inventor or discoverer of the said improvement, and that the same hath not, to the best of his knowledge and belief, been previously known or used; has paid into the Treasury of the United States the sum of thirty-five dollars, and presented a petition to the Commissioner of
774 Patents signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose.

These are, therefore, to grant, according to law, to the said R. Hoffheins, his heirs, administrators, or assigns, for the term of seventeen years, from the fourth day of July, one thousand eight hundred and sixty-five, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said R. Hoffheins in the schedule hereunto annexed, and is made part of these presents.

In testimony whereof I have caused these letters to be made patent, and the seal of the Patent Office has been hereunto affixed.

Given under my hand, at the city of Washington, this fourth day of July, in the year of our Lord one thousand eight hundred and sixty-five, and of the Independence of the United States of America the ninetieth.

W. T. OTTO,
Acting Secretary of the Interior.

Countersigned and sealed with the seal of the Patent Office.
[SEAL.]
D. P. HOLLOWAY,
Commissioner of Patents.

The schedule referred to in these letters patent and making part of the same.

To all whom it may concern:

Be it known that S. R. Hoffheins, of Dover, county of York, and State of Pennsylvania, have invented certain new and useful improvements in reaping and mowing machines, and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

775 Figure 1, sheet 1, is a plan view of my machine having a portion of the sickle and finger-beam broken away.

Figure 2, sheet 1, is a front elevation of the machine, showing the manner of connecting the finger-beam to the hinged draught-frame.

Figure 3, sheet 1, is a longitudinal section through the machine, looking from that side carrying the cutting apparatus.

Figure 4, sheet 1, is a longitudinal section, looking toward the cutting apparatus, and taken between the carriage wheels.

Figure 5 is an enlarged plan view showing the mode of connecting the cutting apparatus to the main supporting frame.

Figure 6, sheet 2, is an enlarged plan view of the machine, with a portion of the finger-beam b oken away.

Figure 7, sheet 2, is an enlarged front elevation of the mechanism for giving the required movements to the gathering arms and rake.

Figure 8, sheet 3, is a vertical section through figure 7.

Figure 9, sheet 3, is a plan view of figures 7 and 8, showing the rake-arm in its highest and also its lowest position.

Similar letters of reference indicate corresponding parts in the several figures of the three plates of drawing.

This invention relates to that class of harvesting machines wherein two carriage wheels are employed for sustaining the main frame and driver's seat, and wherein the gavels are delivered upon the ground at one side of the cutting apparatus and in rear of the carriage frame, so as to be out of the way of the machine in its subsequent rounds.

One object of my invention is to provide for the use of an automatic revolving rake and a jointed finger-beam, which latter will rise and fall, and thus accommodate itself to the inequalities of the
776 ground without changing its relative position with respect to the sweep of the rake, or the revolving gathering arms; and also to enable the attendant, while riding upon the machine, to stop or start the rake, or to elevate or depress the front part of the cutting apparatus, as will be hereinafter described.

Another object of my invention is to provide for sustaining the cutting apparatus at one side of a two-wheel carriage, by means of a frame which is hinged to the main axle. and which is so constructed and braced that the entire weight upon the said frame will be sustained between the two wheels, in such manner that a very short sweep of the rake will deliver the gavels upon the ground in rear of said carriage, as will be hereinafter described.

By my invention I am enabled to communicate a revolving motion from the main supporting axle directly to the rake and reel through the medium of a single shaft, which is provided with contrivances for enabling the attendant, whilst riding upon the machine, to stop the motion of the rake at any desired moment and retain it in the desired position as long as he may desire, as will be hereinafter described.

By my invention I enable the attendant, while riding upon the machine, to control the height of the sickle from the ground, to stop or to start the sickle at pleasure, and to start or stop the revolving rake, as will be hereinafter described.

Provision is also made for keeping the rake-arm of a revolving rake down upon the platform, in passing over the same, with an elastic pressure, so that it will properly press upon and accommodate itself to heavy or light swaths, as will be hereinafter described.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings A A′ represent two large supporting wheels, which are both applied on an axle, *a*, so that when the machine is moved forward the axle will turn with them, but when

777 the machine is moved backward they will turn loosely around it; for this purpose ratchet wheels and pa/ls of a suitable description are employed. One end of the axle, *a*, extends out a short distance beyond the hub of the wheel which is nearest the cutting apparatus for the purpose of giving motion to the rake and gathering arms, as will be hereinafter set forth. Two bearings, a^1 a^1, are pivoted to the axle *a*, at suitable distances apart, and in such manner that they can have no lateral play; and to the forward ends of these bearings, a^1 a^1, the hounds or frame B, to which the draft-pole B′, is attached, is hinged, as shown in the drawings, plates 1 and 2. The draft-pole B^1 is arranged as near the wheel A^1 as possible, for bringing the line of draft as near as practicable to the point of greatest resistance, and thus prevent undue side draft upon the machine.

Beneath this hinged pole frame, B, and secured in a suitable manner to the bearings a^1 a^1, is the main supporting frame C, which inclines forward beyond the circumference of the main wheels A A^1, and is sufficiently depressed at its front end to support the shaft, through which motion is transmitted to the sickle, as will be hereinafter described. This frame C has a curved arm, C^1, formed on that side nearest the inner wheel A^1, which arm extends around the front part of this wheel and projects backward and downward a suitable distance, and at its termination a vertical box, *b*, is formed on it, having a dovetail slot cut in it, as shown in figures 1, 2, 5, and 6. The frame C being secured to the pivoted bearings a^1 a^1 beneath the axle *a*, the rear end of this frame projects a short distance beyond the rear side of said axle, and receives upon it the driver's seat D, which is secured to a post projecting backward, so that the weight of the driver while sitting in his seat will assist in counteracting the weight of the forward portion of said frame, and thus enable the driver, with the assistance of a lever properly arranged, to elevate the front part of the cutting apparatus while the machine is in operation.

778 As it is intended to apply the cutting apparatus to the rear extremity of the curved arm C^1 of frame C, so that the whole resistance upon the cutting apparatus in cutting grass or grain shall be received by the axle *a*, I apply a brace, *b′*, to the rear end of said arm, and connect its rear end in a suitable manner to the outer extension of the axle-tree *a*, as shown in figures 1 and 6. Another diagonal brace, b^2, I pivot at one end to the front part of the inner shoe *c*, and secure it at the opposite end to the front part of the frame C. By this arrangement I not only get the entire weight to be sustained by the main wheels A A^1, between these wheels, but make the axle-tree *a* resist all the strain brought to operate against the machine in the operation of cutting.

The rear end of the shoe *c*, to which the finger-beam N is secured, has a projection, c^1, formed on it, and into the rear vertical side of this projection a pin, c^2, is rigidly secured, which pin has a conical head that is adapted to fit into and move up and down in the vertical dovetail slot which is formed in the box b^2 of arm C. This pin, c^2, forms a pivot connection of the cutting apparatus with the main supporting frame, and also such a connection as will not only allow the outer end of the cutting apparatus to rise and fall upon uneven ground, but which allows the inner end of said cutting apparatus to rise and fall bodily, the frame C remaining stationary. In a line coinciding with the axis of the pin c^2 is the joint of the diagonal brace b^2, which sustains the cutting apparatus against backward strain, as before described.

I employ two caster-wheels for sustaining the cutting apparatus upon the ground, one of which is located at the forward end of the shoe

c, and the other, which is not represented, is located at or near the rear end of the divider. Both of these wheels should be so applied that the cutting apparatus can be set higher or lower as occasions may require. Provision is also made for adjusting the rear end of the shoe c at any desired height, and preventing it from dropping down; at this
779 end a screw-bolt or pin, d, is inserted into the box b, beneath the pin-head c^2, and a number of holes can be made, one above the other, into said box to receive the pin d, which latter will prevent the rear end of shoe c from falling lower than the desired point.

The sickle F is reciprocated by means of a pitman rod, e, which is pivot' eccentrically to the face of a circular disk, e^1, that is secured on the forward end of a rotating shaft, e^2; this shaft, e^2, has its bearings on the lower side of the frame C, and on that side nearest the supporting wheel A, as shown in figures 1, 3, and on the rear end of said shaft is keyed a bevel spur-wheel, f, which is driven by a large bevel spur-wheel, f^1, on a horizontal transverse shaft, g. This latter shaft curves on one end of a spur-wheel, g^1, which engages with the teeth of the inside gear-wheel g^2 that is keyed on the main shaft a. A collar, g^3, is keyed on the shaft g, and receives in an annular groove formed in it the bifurcated end of a lever, g^4, which is pivoted to frame C and extends up to a point which will be convenient for the driver to operate upon it whilst sitting in the seat D. The shaft g is allowed to have a longitudinal movement in its bearings sufficient to permit the spur-wheel f^1 to be thrown out of gear with its pinion, f, by a lateral movement of the lever g^4. By such an arrangement the driver can start or stop the sickle while the machine is moved forward.

G represents a bent arm, which is rigidly secured at one end to the inner end of the finger-beam N, and which is attached by a chain, h, at its other end to an oscillating segment, h^1, to which a long lever, h^2, is applied. This segment is pivoted to a semicircular ratchet-plate, 2^1, which is secured rigidly in place on top of the hinged-pole frame B, as shown in figures 1, 2, 4, and 6. By this means the weight of the cutting apparatus when in an elevated position is sustained upon and by the frame B between the team and the axle a. The lever h^2 is of sufficient length to enable the driver to operate it while riding upon the machine; and this lever is so constructed that it will be received
780 by the ratchet-teeth in plate $2'$, and held in any position in which it may be placed.

H represents a short frame consisting of two standards and an inclined post, I, as shown in figures 7 and 8. This frame is rigidly bolted to the shoe c and finger-beam N, so as to stride the inner end of the sickle F, and permit this sickle to work freely beneath it. J is a large bevel spur-wheel, which is supported on the top of the enlarged portion of frame H so as to revolve about the axis of the post I in a plane inclining toward the outer end of the cutting apparatus. Directly above this wheel, and affixed to the post I, is a bevelled ring, j, and still further above said wheel is a yoke, k, which is arranged to revolve in a plane parallel to the finger-beam, or nearly so. The yoke k works in an annular groove formed in the post I, as shown in figure 8, sheet 3, and to ears formed on this yoke diametrically opposite each other a fork, l, is pivoted, which fork is secured to or formed on the stock l^1 of the rake-arm K at an obtuse angle thereto. On the lower side of the stock l^1 eye bearings, l^2, are secured, which receive a bar, m, that is acted upon by a spring applied at one end and held in place by an adjustable nut, as shown in figure 8. The opposite end of the spring-bar is pivoted or linked to a rocking loop, m^1, which is pivoted to eye-bear-

ings secured to the bevel wheel J. A bearing for a friction-wheel, *n*, projects from the heel of the rake-arm stock l^1, and brings said wheel in such position during the sweep of the rake over the platform that it (the wheel) will bear upon the bevelled surface of the fixed ring j^1 and prevent the rake-arm from swagging in its passage over the platform. When the bevel spur-wheel J is rotated the rake-arm K will describe the perimeter of a cone, and in passing over the platform this arm moves nearly parallel to it, after which it will rise so as to pass over the wheel A^1 and then descend again to make another sweep over the platform.

781 Through the axis of the inclined post I passes the reel-post L, carrying on its upper end the reel or gathering arms L^1, which are secured to said post at, or nearly at, right angles to each other, as shown in figures 8 and 9.

The lower end of the reel-post L has a bevel spur-wheel, *p*, keyed to it, which engages with a spur-wheel, p^1, that is keyed on an inclined shaft, p^2, which has its bearings in frame H, as shown in figure 7 and 8. This shaft projects from one side of frame H a short distance, and receives upon it a bevel-wheel, *q*, which has an annular-slotted hub formed on it to receive and be embraced by the forked end of a lever, M, which is pivoted to the arm C^1, of frame C, as shown in figures 1 and 6. By means of the lever M the wheel *q* can be thrown into or out of gear with the large bevel-wheel J, and when thrown into gear with this wheel, wheel *q* is, at the same time, clutched with the shaft p^2. This shaft p^2 receives a rotating motion from the axle *a* of the carriage wheels A A^1, through the medium of a shaft, S, which is connected to the axle *a*, and to the short shaft p^2, by means of universal joints *s s*. In practice the shaft S will be made extensible so as to admit of the vibrations of the cutting apparatus.

The driver can move the wheel *q* so as to throw it into gear with the wheel J, or out of gear therewith, by means of a foot-rest, *t*, which is affixed to an upright vibrating lever, t^1, that is connected by the rod *v* to the lever M.

The speed of the rake and reel arms can readily be regulated and properly timed by means of spur-wheels of the proper size.

It will be seen from the above description that the reel-arms and rake-arm revolve about a common centre, and that the mechanism for giving the required movements to said arms is mounted upon a single frame, H, which is sustained over the shoe C at the inner end of the cutting apparatus. It will also be seen that the cutting apparatus can rise or fall, or move about its joint connection with frame arm C^1, without in any manner affecting the perfect working of both reel and

782 rake, and while such is the case provision is made for enabling the driver, whilst in his seat, to start or stop the rake at pleasure, and thus regulate the size of the gavels as he may desire. It will also be seen that by means of the curved arm C^1 of the frame C, I am enabled to locate the cutting apparatus so far back that a very short platform is required to enable me to deposit the gavels in rear of the driving-wheels A A^1, consequently a very short sweep of the rake-arm will be required, and less time and power will be expended in delivering the gavels. By thus forming an outer support for the cutting apparatus and extending it back toward the rear part of the carriage, I am enabled to employ the rear brace, b^1, and also to drive the gathering and raking arms by means of a diagonal shaft connected directly to the axle *a*.

By the contrivance which I have described and shown, the rake and

reel combined are both supported at the inner side of the platform or inner shoe of the cutting apparatus, and forward of the driving-wheels or axle thereof, and thereby the resistance which they meet with does not occasion as much side draft or lateral strain upon the tongue of the machine as is experienced with other arrangements of rakes and reels.

I have described and shown one practical plan of carrying out my invention; but I do not limit myself to the exact construction and arrangement of the devices shown, as it is obvious that the same may be modified without departing from the principle of operation set forth. For instance, the reel-arms which are represented may be removed with their shaft, and instead of the short shaft shown, a long shaft, with a bevel-wheel both at its top and bottom, may be arranged in its place. The shaft thus provided with a top bevel-wheel might be made to drive a horizontal reel, which is sustained at one or both ends in any of the known ways. With this modification, the parts would require to be proportioned relatively, so as to have the rake clear the reel in its movements over the platform, and the rake axis might be set nearly upright so as to answer as a support for the inner end of the
783 reel. In all other respects the devices for controlling the motions of the rake, starting and stopping it, and also for operating the reel, would be substantially as shown. This modification is not a preferable one, however, as the reel and rake arranged on the one upright or inclined shaft, as represented, is much cheaper and far more effective in their operation than any other arrangement with which I am familiar, for the reason that both the rake and reel (although independent in their revolutions, and the former capable of being stopped without interfering with the continuous revolution of the reel) can be mounted wholly upon the hinged cutting apparatus of harvesters, and thus mounted, no change of relation between the platform and the rake and reel arms will be experienced from the rising and falling of the cutting apparatus in its passage over uneven ground. This is not the only change that may be made, but it is unnecessary to mention others here.

Before stating my claims, I will mention or allude to the state of the art in this class of invention up to the date of my application for a patent, as follows:

A continuously revolving rake and reel arm or arms, all arranged and moving in the same path around an upright or inclined shaft, had been contrived.

A rake which has its support on the reel-shaft, and moves around with the reel during a portion of the reel's revolution, but afterwards moves on another axis in the path of a horizontal circle in order to sweep off the grain, had also been contrived. In this case the rake has no independent motion around the axis of the reel-shaft.

A rake placed below a reel, which is supported at both ends, such rake having a movement entirely around a vertical shaft, and rising and falling on a pivot passed through said shaft, had also been contrived.

But with none of these rakes do we find any mechanism applied whereby the rake, when combined with the reel so as to move in
784 concert with it, may be stopped and started by the attendant without stopping the machine or the reel.

It must, however, be stated here that the use of a clutch has heretofore been suggested, but in connection with this mere suggestion no mechanical plan of applying the clutch has been shown, and therefore the public are not benefited thereby any more than they would have been if the suggestion had not been made. I have not stopped with a mere

suggestion, but have gone farther and shown a practical and successful plan for stopping and starting a rake which revolves entirely around an axis and is independent of the reel in its motions. One important step to the attainment of this result was the hinging of a rake to a coupling which revolves about the axis of motion of the reel-shaft or the shaft which gives motion to a reel.

Having thus described my invention, what I claim as new, and desire to secure by letters patent, is—

1st. Constructing a combined rake and reel, so that the rake is independent in its revolutions of the reel, upon a support which is mounted upon the hinged cutting apparatus of harvesting machines, substantially as herein described.

2d. The construction of the support H for the combined rake and reel, substantially as described.

3d. Securing the required motions for the rake by connecting it to a revolving ring, or yoke, or coupling, and to a revolving wheel, J, which are arranged in different planes and applied to a central shaft or axial support, substantially as described.

4th. The manner, substantially as described, of connecting the rake to its driving-wheel J, by means of a spring-bar or its equivalent, for the purpose set forth.

5th. The arrangement of the four great wheels, J q p p^1, with the combined but independently revolving rake and reel, substantially as herein described.

6th. In a rake and reel combined, the rake revolving independently of the reel around the axis of the shaft which carries or drives the reel, I claim providing for stopping and starting the rake without
785 disturbing the reel, and without stopping the machine or harvester, substantially in the manner herein described.

7th. The combination of the driver's seat of the harvester, independently revolving rake, independently revolving reel, and stopping and starting contrivance of the rake, substantially in the manner and for the purpose described.

8th. The combination of the extensible and flexible or jointed shaft S, independent rake, and independent reel, substantially in the manner and for the purpose described.

9th. Connecting a rake which turns around the shaft L to opposite sides of a revolving device, K, which serves as a hinge on two sides of the shaft L, for the rake to play up and down upon, and also as a coupling which permits the rake to revolve independently of the reel, substantially as herein described.

10th. The combination of an independently revolving rake, an independently revolving reel, sliding clutch-wheel, or its equivalent, and the hinging and coupling device K, or its equivalent, substantially as and for the purpose herein described.

11th. A rake which revolves or turns independently of the reel, around the shaft L, which drives or carries the reel during its entire circuit, substantially as and for the purpose described.

12th. The arrangement with an independently revolving rake and an independently revolving reel of a contrivance for stopping and starting the rake without stopping the reel, substantially as described.

13th. Constructing a combined rake and reel in such a manner that the rake and reel have independent motions of one another, although the rake moves around the shaft which carries or drives the wheel, substantially as described.

14th. An independently revolving reel mounted upon a hinged cut-

ting apparatus of a harvester, in combination with a revolving rake, substantially as described.

15th. The arrangement in a harvester of the independent reel,
786 independent rake, hinged cutting apparatus, and stopping and starting contrivance, substantially as described.

16th. An independent reel and an independent rake combined, both moving in a similar direction, but in different paths about a common axis or shaft, substantially as herein described.

17th. The combination of an independent revolving rake, which is sustained at only one end, with an independent revolving reel or gatherer, which is also only sustained at one end, in such manner that the rake always maintains a position below the reel, substantially as described.

18th. The combination, with a harvesting machine constructed with two driving-wheels, a jointed cutting apparatus, an independently revolving rake, and independently revolving reel, the reel and rake being mounted on the cutting apparatus, of an adjusting contrivance which is so arranged that the driver, while riding on the machine, can adjust the cutting apparatus and the rake and reel without stopping the machine, substantially as described.

19th. The combination of a hinged curved frame, hinged cutting apparatus, independent revolving rake, and independent revolving reel, substantially as described.

20th. The arrangement of the independently revolving rake and independently revolving reel upon a jointed cutting apparatus, at a point forward of the axle *a*, and to one side of the drive-wheel A^1, substantially as and for the purpose described.

21st. The arrangement in a two-wheeled harvesting machine of a hinged supporting frame, C, a jointed cutting apparatus, a revolving reel or gatherer, and a rake with attachments or connections, by which the attendant of the machine, while riding thereon, can control its motions, substantially as herein described.

22d. Combining a rake and a reel or gatherer in such manner that the former revolves around the axis of the latter, and also inde-
787 pendently of it, and can be stopped and started at the will of the operator while he is riding upon the machine, substantially as described.

REUBEN HOFFHEINS.

Witnesses present:
GEORGE M. SHETTER,
A. W. SHETTER.

Ex'd: H. M. H., C. K.

Defendants' Exhibit, Mears's Patent—S. E. CAVIN, *notary public and special examiner.*

HOFFHEINS *vs.* RUSSELL.

No. 34584.

The United States of America. To all to whom these letters patent shall come:

Whereas, John H. Mears, of Oshkosh, Wisconsin, has alleged that he has invented a new and useful improvement in rakes for harvesters,

which he states has not been known or used before his application; has made oath that he is a citizen of the United States; that he does verily believe that he is the original and first inventor or discoverer of the said improvement, and that the same hath not, to the best of his knowledge and belief, been previously known or used; has paid into the Treasury of the United States the sum of thirty-five dollars, and presented a petition to the Commissioner of Patents, signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose:

788 These are, therefore, to grant, according to law, to the said John H. Mears, his heirs, administrators, or assigns, for the term of seventeen years from the fourth day of March, one thousand eight hundred and sixty-two, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said John H. Mears, in the schedule hereunto annexed, and is made part of these presents.

In testimony whereof I have caused these letters to be made patent, and the seal of the Patent Office has been hereunto affixed.

Given under my hand at the city of Washington, this fourth day of March, in the year of our Lord one thousand eight hundred and sixty-two, and of the Independence of the United States of America the eighty-sixth.

CALEB B. SMITH,
Secretary of the Interior.

Countersigned and sealed with the seal of the Patent-Office.

[SEAL.] D. P. HOLLOWAY,
Commissioner of Patents.

The schedule referred to in these letters patent and making part of the same.

To all whom it may concern:

Be it known, that I, John H. Mears, of Oshkosh, in the county of Winnebago and State of Wisconsin, have invented a new and improved raking attachment for harvesters; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

789 Figure 1 is a perspective view of my invention.

Figure 2 is a vertical section of ditto, with rake elevated.

Figure 3 is a perspective view of the standard, with the guide N permanently attached to it at C C.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in the employment or use of certain shaped guides, arranged in such a manner with a rake that is hinged to the top part of a bevel-wheel which turns on a vertical standard or spindle; on the top of said standard is attached a guide, curved in such shape as to cause said rake to be forced down from an upright or vertical position to a horizontal one on a platform of a harvester at any point desired, and keep the rake-teeth pressed down on the platform until by a revolution of the bevel-wheel the rake sweeps the grain from the platform, when it is thrown or brought up to a vertical position by

an outside guide and the revolving of the bevel-wheel, in which position it remains while passing the machinery and reel of a harvester.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

Figure 1 represents a platform of a harvester, with the rake P forced down on the platform, just back of the cutter-bar, by the construction and position of the guides X and N, acted upon by the bevel-wheel S, on which the rake P is hinged at L. The pinion Q is attached and driven by the machinery of a harvester in any of the known methods. N is a permanent guide attached to the standard 3 at C C. The guide X has a square hole through it, which allows it to rest on the shoulder of Fig. 3 at Z, and retained in its place by a nut at O, Fig. 3. The guides N and X are made of round iron or steel of suitable diameter, except that the guide X has a square block of iron attached to it similar to 5 5. The bevel-wheel S has a projection permanently attached to its upper side L with a slot, in which the head of rake P
790 hinges. The spindle of standard, Fig. 3, passes through the bevel-wheel S, which rests on the shoulder B, as shown in Fig. 3, and is kept in its place by a pin passing through the spindle at D, Fig. 3. 8 is a friction-roller put on the head of rake P to diminish friction as the rake P is passing between the guides X and N, and also while the rake is traversing the platform and passing under guide X at T, Fig. 2. The extra rake 7 can be detached or attached from or to rake P at pleasure, according to the length of grain to be cut. X is a guard which sets loosely around the bevel-wheel S, the top of wheel S extending just above the top of guard K, so as not to interfere with the rake as it passes under guard X at T, Fig. 2. There is a slot at G to allow guard K to set over the shaft of pinion Q, Fig. 2.

The guard K is for the purpose of keeping the gear clear from straw and dirt. To have the rake P come down on the platform at any point desired, loose the nut H, Fig. 3, on the under side of the platform and turn the standard 3, Fig. 3, either way as desired, which turns the guides also as they are attached to the same, and consequently throws the rake on the platform at any point needed, thus allowing the reel of a harvester to be set forward or back without interfering with the rake.

From the above description it will be seen that as the machine is drawn along, and the bevel-wheel S turned in the direction of the arrow, Fig. 1, the rake P will sweep across the platform in close contact with it, and rake the cut grain from it, after which it rises up to a vertical position, as shown in Fig. 2, which position it keeps while passing the machinery of the harvester and reel, when it is brought down on the platform, as in Fig. 1. The device, as a whole, is simple, there being no parts liable to become deranged by use, and can be applied to any of the ordinary harvesters in use. The rake P is firmly pressed down while sweeping the platform by guides X, under
791 which it passes, the friction rollers on rake P coming in contact with the underside of guide X at T, Fig. 2. Guide X is attached to the spindle or standard at a point higher up than the top of guide N, so that when rake P is brought down from a vertical position to a horizontal one on the platform the head of rake P is thrown in under guide X.

Having thus described my invention, what I claim as new, and desire to secure by letters patent is: Guide X, constructed and operating as

set forth, and arranged relatively with guide N, standard 3, bevel-wheel S, and double rake P, as and for the purposes set forth.

JOHN H. MEARS.

Witnesses:
E. R. COLTON.
J. JACKSON.

Exd. L. P. H.

Defendants' Exhibit, Mears's File.—S. E. CAVIN, *Notary Public and Special Examiner.*

HOFFHEINS
vs.
RUSSELL.

OSHKOSH, WISCONSIN, *January 24th*, 1862.

To the COMMISSIONER OF PATENTS, *Washington, D. C.:*

SIR: Inclosed please find $15, which please apply as application fee for patent on rake attachment for harvesters.

The model, drawings, and specification for the same, I have this day forwarded to your address.

Yours, respectfully,

JOHN H. MEARS.

Received and filed January 29th, 1862.—E. E.

792 OSHKOSH, WISCONSIN, *January 24th*, 1862.

To the COMMISSIONER OF PATENTS, *Washington, D. C.:*

Inclosed please find model for raking attachment for harvesters.

Drawings and specification I have sent this day by mail.

Also $15 for application for fee on the same.

JOHN H. MEARS.

Received and filed January 30th, 1862.—E. E.

OSHKOSH, WISCONSIN, *January 24th*, 1862.

To the COMMISSIONER OF PATENTS:

SIR: Inclosed please find drawings and application papers for patent on self-rake for harvester. One of the drawings met with an accident, which you will perceive, which, if you see fit, you can attach to the patent if one is granted.

The model for the same we have sent by express, and also have sent $15 for application fee by mail.

I want an undivided interest of the patent assigned to Alfred Ward, which assignment, as regards the best mode of making it, you will please inform me when you acknowledge the receipt of the papers.

Yours, respectfully,

JOHN H. MEARS.

Received and filed January 29th, 1862.—E. E.

Petition.

To the COMMISSIONER OF PATENTS:

The petition of John H. Mears, of Oshkosh, in the county of Winnebago and State of Wisconsin, respectfully represents that your petitioner has invented a new and improved raking attachment for harvesters, which he verily believes has not been known or used prior to the

invention thereof by your petitioner. He therefore prays that letters-patent of the United States may be granted to him therefor, vesting in him and his legal representatives the exclusive right to the same,
793 upon the terms and conditions expressed in the act of Congress in that case made and provided, he having paid fifteen dollars into the Treasury, and otherwise complied with the requirements of said act.

JOHN H. MEARS.

Oath.

COUNTY OF WINNEBAGO,
State of Wisconsin, ss:

On the twenty-third day of January, A. D. 1862, before the subscriber, a justice of the peace in and for said county, personally appeared the above-named John H. Mears, and made solemn oath that he verily believes himself to be the original and first inventor of the within described improved raking attachment for harvesters, and that he does not know or believe that the same was ever before known or used, and that he is a citizen of the United States.

E. R. COLTON,
Justice of the Peace.

To all whom it may concern:

Be it known that I, John H. Mears, of Oshkosh, in the county of Winnebago, and State of Wisconsin, have invented a new and improved raking attachment for harvesters, and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a perspective view of my invention.

Figure 2 is a vertical section of ditto, with rake elevated.

Figure 3 is a perspective view of the standard with the guide N permanently attached to it at C C.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in the employment or use of certain shaped guides, arranged in such a manner with a rake that is hinged to the top part of a bevel-wheel, which turns on a vertical standard or spindle; on the top of said standard is attached a guide, curved in such shape as to cause said rake to be forced down from an upright
794 or vertical position to a horizontal one on a platform of a harvester at any point desired, and keep the rake-teeth pressed down on the platform until, by the revolution of the bevel-wheel, the rake sweeps the grain from the platform, when it is thrown or brought up to a vertical position by an outside guide and the revolving of the bevel-wheel, in which position it remains while passing the machinery and reel of a harvester.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it: Figure 1 represents a platform of a harvester with the rake P, forced down on the platform just back of the cutter-bar, by the construction and position of the guides X and N, acted upon by the bevel-wheel S, on which the rake P is hinged at L. The pinion Q is attached and driven by the machinery of a harvester in any of the known methods* [and can be attached to

* Part enclosed in bracket erased in original, Feb. 13th, 1862.

a platform at any horizontal angle and turn the bevel-wheels S]. N is a permanent guide attached to the standard 3, at C C. The guide X has a square hole through it, which allows it to rest on the shoulder of figure 3, at Z, and is retained in its place by a nut at O, figure 3. The guides N and X are made of round iron or steel, of suitable diameter, except that the guide X, has a square block of iron attached to it, similar to 5 5. The bevel-wheel S has a projection permanently attached to its upper side, L, with a slot, in which the head of rake P hinges. The spindle of standards, figure 3, passes through the bevel-wheel S, which rests on the shoulder B, as shown in figure 3, and is kept in its place by a pin passing through the spindle at D, figure 3; 8 is a friction-roller, put on the head of rake P, to [do away]* [diminish] friction, as the rake P is passing between the guides X and N, and also while the rake is traversing the platform and passing under guide X, at T, figure 2. The extra rake 7 can be detached or attached from or
795 to rake P at pleasure, according to the length of the grain to be cut. K is a guard, which sets loosely around the bevel-wheel S, the top of wheel S extending just above the top of guard K, so as not to interfere with the rake as it passes under guard X, at T, figure 2.

There is a slot at G, to allow guard K to set over the shaft of pinion Q, figure 2.

The guard K is for the purpose of keeping the gear clear from straw and dirt. To have the rake P come down on the platform at any point desired, loose the nut H, figure 3, on the under side of the platform, and turn the standard 3, figure 3, either way as desired, which turns the guides also, as they are attached to the same, and consequently throws the rake on the platform at any point needed, thus allowing the reel of a harvester to be set forward or back, without interfering with the rake.

From the above description it will be seen that as the machine is drawn along, and the bevel-wheel S turned in the direction of the arrow, figure 1, the rake P will sweep across the platform in close contact with it, and rake the cut grain from it, after which it raises up to a vertical position, as shown in figure 2, which position it keeps while passing the machinery of the harvester and reel, when it is brought down on the platform, as in figure 1. The device, as a whole, is simple, there being no parts liable to become deranged by use, and can be applied to any of the ordinary harvesters in use. The rake P is firmly pressed down while sweeping the platform by guide X, under which it passes. The friction roller or rake P coming in contact with the under side of guide X at T, figure 2, guide X is attached to the spindle or standard at a point higher up than the top of guide N, so that when rake P is brought down from a vertical position to a horizontal one on the platform, the head of rake P is thrown in under guide X.

Having thus described my invention, what I claim as new, and desire to secure by letters-patent, is—

796 Guide X, constructed and operating as set forth, and arranged relatively with guide N, standard 3 [hinged],† bevel-wheel S, and double rake P, as and for the purpose set forth.

JOHN H. MEARS.

Witnesses:
E. R. COLTON,
J. JACKSON.

Received and filed January 29th, 1862.—E E.

* Part enclosed in bracket erased in original and word "diminish" inserted.
† Part enclosed in bracket erased in original.

U. S. PATENT OFFICE, *February 4th*, 1862.

SIR: The specification of your application for letters-patent for an alleged improvement in raking attachment to harvesters is returned to you herewith for correction in the particulars noted in pencil as defective.

Thus amended, as at present advised, the patent will be allowed.

Respectfully, etc.

JOHN H. MEARS, Esq.,
Oshkosh, Winnebago Co., Wis.

A. M. S., 16.

OSHKOSH, WIS., *February 13th*, 1862.

D. P. HALLOWAY, Esq., *Washington:*

SIR: Your letter of the 4th inst. was received, and specification amended, as noted in pencil, and sent to your address by return mail, for improvement in raking attachment to harvesters. As your letter states that by thus being amended a patent would be allowed, I herewith inclose the balance of the patent fee, $20.

Respectfully yours,

JOHN H. MEARS.
A. M. S., 16.

OFFICE TO JOHN H. MEARS, *February 4th*, 1862.

To D. P. HALLOWAY,
Commissioner of Patents, Washington, D. C.:

I hereby amend my specification by inserting the letter t between the letters i and t in the word dito, so as to make it read ditto, in the sixteenth * line of the second page thereof.

Also by striking out the letter i in the word bevil, and inserting in its stead the letter e, so as to make it read bevel, wherever
797 said word occurs in my specification.

Also by striking out the letter "i" in the first syllable of the word "virtical" and in its stead inserting the letter "e," in the ninth line of third page thereof.

I also amend my specification of striking out the letter "a" in the second syllable of the word "horizontal," and in its stead inserting the letter "i," where said word occurs in the thirteenth and fourteenth lines of the third page thereof.

Also by striking out the words "and can be attached to a platform at any horizontal angle and turn the bevel-wheel S," where said words occur in the fourth, fifth, and sixth lines of the fourth page thereof.

Also by inserting the letter "h" between the letters "w" and "i" where they occur in the word "w'ich" in the eighth line of the fourth page thereof.

Also by inserting the letter "l" between the letters "lo," of the word "al'ows," which said word occurs in the eighth line of the fourth page thereof.

I also amend my specification by striking out the words "do away," in the twenty-third line of the fourth page thereof, and in their stead insert the word "diminish."

Also by inserting the word "the" after the word "as," in the twenty-third line of the fourth page thereof.

* The word sixteenth was erased, and twenty-fourth inserted.

Also by adding the letters "ly" to the word "loose," in the thirty-first line of the fourth page thereof.

Also by striking out one "p" in the word "opperating," where said word occurs in the claim appended thereto.

Also by striking out the word "hinged," in the claim appended thereto.

JOHN H. MEARS.

Amendment filed Feb. 13th, 1862.—A. M. S.

OSHKOSH, WIS., *February 23d*, 1862.

COMMISSIONER OF PATENTS:

DEAR SIR: I have this day received your official notification to me that a patent would be allowed for my last improvement for raking attachment for harvesters on the receipt of twenty dollars.

798 I would state that, on the 13th inst., I mailed $20, in Treasury notes, to your address, for to be applied for ballance of *of* fee on said invention. As you make no mention of the receipt of the same I thought it best to inform you that it had been sent.

I had the letter containing the $20 registered here at the post-office. Please investigate the mat'er and oblige

Yours, very respectfully,

JNO. H. MEARS.

Will issue 4th March.

Received and filed Feb. 28th, 1862.—H. McC.

U. S. PATENT OFFICE, *June 13th*, 1862.

SIR: Application has been made to this office for letters patent for an alleged improvement in rakes for harvesters, which is found, on examination, to interfere with an improvement shown and described, but not claimed, in the patent granted to you made March 4th, 1862.

The interfering claim of said application is in substance as follows, viz: "Adjusting the (rake-guiding) cam upon its seat, for the purpose of varying the point or position at which the rake drops upon the platform, so as to suit the different kinds or lengths of grain, substantially as described." If you desire to contest the question of priority of invention, it will be necessary for you to present to the office a claim for said improvement, either by filing a new application or under an application for the reissue of the patent referred to, within thirty days from this date; otherwise, said application will be considered without reference to your invention.

Respectfully, etc.,

JOHN H. MEARS, Esq.,
Oshkosh, Winnebago Co., Wis.

A. M. S., 16.

Office to John H. Mears, June 13th, 1862.

799 No. 34584.

John H. Mears, of Oshkosh, county of Winnebago, State of Wisconsin.

RAKING ATTACHMENT FOR HARVESTERS.

Rec'd, January 29th, 1862.
Petition, " "
865m——29

Affidavit, " "
Specification, " "
Drawings, " "
Model, January 30th, 1862.
Cert. dep.
Cash, $15, January 29th, 1862.
Add'l fee, cash $20, February 19th, 1862.
Examined, Chas. G. Page, February 13th, 1862.
Issue, P. L. Hayes, February 18th, 1862.
Patented March 4th, 1862. 186.
Recorded vol. 138, page 233.
Circular, February 19th, 1862.
R., send rules, etc., ½.
Specimen returned February 4th, 1862.
Notice of interference, thirty days allowed for filing an application covering the improvement claimed. June 13th, 1862.
Ex'd, S. P. H. Improvements in rakes for harvesters.

Defendants' Exhibit, Reese File of 1866.—S. E. CAVIN, *notary public and special examiner.*

HOFFHEINS
vs.
RUSSELL.

To all whom it may concern:

Be it known that I, Adam R. Reese, of Phillipsburgh, in the county of Warren, and State of New Jersey, have made, constituted, and appointed, and by these presents do make, constitute, and appoint William D. Baldwin, of Washington City, in the District of Columbia,
800 my true and lawful attorney, with full power and authority, for me, and in my name to make and prosecute an application for letters patent of the United States, for certain new and useful improvements in harvesters, and to receive such letters patent when issued, hereby ratifying, confirming, and allowing whatsoever my said attorney may lawfully do in the premises.

In testimony whereof I have hereunto set my hand and seal this first day of December, A. D. 1863.

ADAM R. REESE. [SEAL.]

LOUIS M. TEEL.
WILLIAM A. HUFF.

Petition.

To the Commissioner of Patents:

The petition of Adam R. Reese, of Phillipsburgh, Warren County, New Jersey, respectfully represents that your petitioner has invented certain new and useful improvements in harvesters which he verily believes have not been known or used prior to the invention thereof by your petitioner; he therefore prays that letters patent of the United States may be granted to him therefor, vesting in him and his legal representatives the exclusive right to the same, upon the terms and conditions of the act of Congress in that case made and provided, he having paid fifteen dollars into the Treasury, and complied with the other provisions of said act.

ADAM R. REESE.

To all whom it may concern:

Be it known that I, Adam R. Reese, of Phillipsburgh, in the county of Warren and State of New Jersey, have invented certain new and useful improvements in harvesters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which make part of this specification, and in which—

Fig. 1 represents a view in elevation, of a two-wheeled hinged joint mowing-machine, with my improvements applied thereto.

801 Fig. 2, a similar view of the same, as seen from the divider side thereof, with the finger-beam and platform removed, and—

Fig. 3, a plan or top view of the machine:

The improvements herein claimed consist:*

First. In so attaching an automatic rake (rotating on a vertical axis or one nearly so), to a two-wheeled hinge-joint harvester as to permit the driver to occupy his seat on the machine while in operation, without interference from the rake-arms.

Second. In so combining the finger-beam, main frame, and raking mechanism, that the rake, while free to conform to the undulations of the finger-beam, is at the same time driven from the main frame, and has its weight supported between the two main wheels of the machine, whereby the weight is equally distributed between the driving-wheels, and the machine properly balanced.

†Third. In combining a series of rake-arms pivoted or hinged at a point intermediate between their ends, and mounted on a rotating axis, with a stationary cam-ring in which the inner ends of the rake-arms traverse in order to obtain a clear space for the driver.

In the accompanying drawings my improvements are shown as applied to a "Ball mowing machine" (which is one of the class known as hinge-joint harvesters), for the purpose of adapting it both to reaping and gathering grain. The main frame A rests upon two supporting and driving-wheels, B B^1, keyed upon and ordinarily turning with the same axle B^2.

The finger-beam C and platform D are hinged to the frame in the usual way by means of a drag-bar, E, and coupling-arm or link F. The outer or grain end of the platform is supported by a small wheel, *d*.

The raking mechanism is mounted in a frame ‡[in this instance] consisting of a piece of wrought-iron pipe, G, having a foot or socket, *g*, of cast or wrought iron bolted to the inner end of the finger-beam. A smaller piece of pipe, G^1, crosses this standard, G (nearly at right

802 angles thereto and so as to lie horizontal, or nearly so), and is strongly bolted thereto near its middle. Its inner end is secured to the finger-beam by a bar, g^1, while its outer end carries a step, g^2, in which the foot of the rake-shaft, or spindle H, turns. The spindle likewise turns near its upper end in a bearing, g^3, in the upper end of the rake-post G. By this mode of construction a strong, light, and rigid support is secured for the rake.

Four cross-arms, I, are [in this instance]§ secured upon and turn with the spindle H. The rake-arms J are pivoted or hinged near their inner ends to the outer ends of these cross-arms in such a manner as to vi-

* Part enclosed in bracket erased in original. [Insert A and erase as amended, filed March 21st, 1866.]

† Part enclosed in bracket erased in original. [Erased by amendment, filed December 30th, 1863.]

‡ Part enclosed in brackets erased in original.

§ Part enclosed in bracket erased in original.

brate freely in a vertical plane, while their inner ends carry friction rollers, *j*, which run in the grooves of an eccentrically curved stationary cam-ring, K, secured upon the post G, by a set-screw, *k*, which renders the cam-ring adjustable vertically upon the post.

A stop-pin, j^1, is mounted on the inner end of each of the levers J (although only one is shown in the drawing), and a plate spring, j^2, is likewise interposed between the inner ends of these levers and the cross-arms I. When the rake is sweeping over the platform, the stop-pin j^1, bears against the front side of the cross-arms, and thus prevents the pivots of the rake-arms from being strained. The spring j^2 is for the purpose of assisting the rake to rise the moment it has finished sweeping the grain off the platform (the cam-ring being suitably curved at the proper point for this purpose), and thus prevent dragging or scattering the gavels.

In the drawings only one of the rake-heads L is shown as having teeth; one rake is generally sufficient, and I prefer to leave the other heads without teeth. as when thus arranged they act as reel-ribs to press the standing grain back upon the platform, but not to rake it off. Teeth may, however, be inserted in as many of the heads as desired.

As the main frame A, on which the driving gear is mounted, always maintains a fixed relation to the ground, while the finger-beam,
803 platform, and rake rise and fall in conformity to the undulations of its surface, it becomes necessary to devise some means for driving the rake uniformly in whatever position it may assume. To do this, I mount a sprocket-wheel, H^1, upon the rake-spindle, and drive the rake by a chain encircling the sprocket-wheel and a correspondin g pulley, B^3, on the driving-axle B^2. In my early experiments with my rake I encountered much difficulty from the slipping of the chain. I therefore devised the following method of driving the rake with a slack chain, and without liability to slip:

I employ a common trace-chain, M, with straight links, and, instead of pins on the sprocket-wheel, form a deep groove longitudinally in the periphery of the wheel for one side of the links to enter, and also divide it transversely into cells of a size corresponding to that of the links. The driving-pulley B^3 is constructed in a similar manner, and thrown into and out of gear by a sliding-clutch operated by a foot-lever, *b*, extending forward to a point near the driver's seat, as shown in Fig. 3. By this mode of construction of the chain-pulleys one side of the chain M is always kept taut, while the other side runs slack, as shown in Fig. 3, so that an increase of several inches in the length of the chain will not in the least affect the working of the rake. The chain passes over a spring-guide, *m*, just before encircling the sprocket-wheel H^1, which prevents it from slipping off or dropping below the wheel.

A seat, N, for the driver, is mounted upon the frame A; when used as a reaper, this seat is located on the front of the frame, near the rear end of the tongue, where, as shown in Fig. 2 of the drawings, the driver is out of the way of the rake, and so located as to aid materially in counterbalancing its weight. When used as a mower, the rake and platform are, of course, removed, and the driver's seat is then shifted to the position shown by the red lines in Fig. 2, to counterbalance the weight of the tongue.

*[In all machines of this class of which I have any knowledge
804 it was necessary, previous to the date of my invention, to re-

* Part enclosed in bracket erased in original.

move the driver from the machine when an automatic rake was employed; for, from the location of the seat, and the manner in which the rake-arms were pivoted, they would necessarily sweep him from his seat.]

To prevent the finger-beam and rake from falling too low, I mount a stop, O, upon the rear of the main frame, between the driving-wheels, as shown in Fig. 1. The horizontal arm G^1 rests upon this stop, and prevents any further descent of the finger-beam, but leaves it free to rise. This stop can be adjusted vertically by means of a set-screw and ratchet (plate O^1).

This stop, moreover, performs another very important function, viz. that of supporting the weight of the finger-beam, platform, and raking mechanism at a point between the driving-wheels, instead of outside of them, by which means the balance of the machine, laterally, is preserved and the side draft diminished.

The cutters are driven by internally geared spur-wheels, P, on the driving-wheels, meshing into spur-pinions, Q, on the countershaft R, which carries a bevel-wheel, S, driving a corresponding pinion, T, on the crank-shaft U. The spur-pinions have backing-ratchets on them, as usual in mowing machines of this class, to prevent the cutters from working when backing.

When mowing both wheels are used as drivers. This plan, however, does not answer with my rake. The driving-wheels are ordinarily keyed fast to and turn with the axle, but when raking I remove the key from the outer wheel B, in order that it may run loosely on the axle, and not turn the rake when the cutters are not working, as this would cause it to comb the grain down upon the platform without its first being severed.

My machine when mowing operates just like the ordinary "Ball mower," and no description of it is, therefore, required here. To adapt it to raking, the driver's seat N is moved forward from the position shown in the red lines in Figs. 2 and 3 to the position shown in blue.

The platform and raking mechanism are then attached. As
805 the machine advances the rake-arms rise and fall, and sweep over the platform in their proper relations, being controlled in their movements by the guide or cam-ring K. (Insert B.)

By pivoting the rake-arms at a point intermediate between their ends, and operating them by a guide acting upon their inner ends, it will be seen that I obtain an ample space in which to locate the driver's seat. I am likewise enabled to elevate the rake-arms sufficiently to avoid striking the driver, *[and even to cause them to revolve without passing over his head], and at the same time use a small cam or guide.

My invention likewise enables me to use a finger-beam capable of conforming freely to the undulations of the ground, and an automatic rake which always maintains its proper relation to the platform can play freely up and down, with respect to the main frame, and yet can be driven from it uninterruptedly and without straining or binding the gearing, while the weight of the raking mechanism is supported between the main wheels, and the driver is permitted to ride on the machine, not only without danger of being struck by the rake, but in a position where his weight is of material assistance in counterbalancing the weight of the raking mechanism.

What I claim as my invention, and desire to secure by letters patent is†—

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*Inserted in original.
†Insert C and erase.

*First. The combination, in a two-wheeled hinge-joint machine, of a driver's seat mounted upon the main frame with a raking mechanism mounted nearly so upon the finger-beam, and rotating on a vertical axis, or one nearly so, substantially in the manner described, for the purpose of enabling the driver to ride upon the machine while the rake is in operation.

Second. The combination of a main frame supported upon two wheels and maintaining a fixed position relative to the ground, and a raking mechanism mounted upon a yielding finger-beam, and 806 capable of conforming to the undulations of the ground, with a stop or support between the driving-wheels, substantially in the manner described, for the purpose of sustaining the weight of the mechanism between the driving-wheels, as set forth.

†Third. The combination of a series of rake-arms rotating on a vertical axis (or one nearly so), pivoted or hinged at a point intermediate between their ends, and having free vertical play, with a stationary guide-cam in which their inner ends traverse, substantially in the manner described, for the purpose of at all times elevating the rake-arms so as to pass freely over the driver, whatever the position of his seat on the main frame.

In testimony whereof I have subscribed my name.

ADAM R. REESE.

Witnesses:
WM. A. HUFF,
LOUIS M. TEEL.

Oath.

NEW JERSEY, *Warren County, ss:*

On this first day of December, A. D. 1863, before me, the subscriber, a justice of the peace in and for said county, personally appeared the above-named Adam R. Reese, and made solemn oath that he does verily believe that he is the original and first inventor or discoverer of the before-described improvements in harvesters, for which he solicits a patent, and that he does not know or believe that the same has ever before been known or used, and that he is a citizen of the United States.

ADAM R. REESE.

Sworn and subscribed before me this first day of December, A. D. 1863.

WM. A. HUFF,
Justice of the Peace.

W. D. B. Dec. 13th, 1865.

807 *Oath anew.*

NEW JERSEY, *Warren County, ss:*

On this first day of December, A. D. 1863, before me, the subscriber, a justice of the peace in and for said county, personally appeared the above-named Adam R. Reese, and, being again sworn, made solemn oath anew that he does verily believe that he is the original and first

*Inserted Jan. 12, 1864. See amendment.
†Erased Dec. 30, 1863.

inventor or discoverer of the before-described improvements in harvesters, for which he solicits a patent, and that he does not know or believe that the same is ever before known or used, and that he is a citizen of the United States.

ADAM R. REESE.

Sworn and subscribed before me this 1st day of December, A. D. 1863.

WM. A. HUFF,
Justice of the Peace.

Rec'd and filed Dec. 3d, 1863. E. E.

UNITED STATES PATENT OFFICE,
Washington, D. C., Dec. 17th, 1863.

SIR: You are hereby notified that your application for a patent for an alleged improvement in harvesters has been adjudged to interfere with a similar application of Messrs. Fisher, Whiteley, Fassler, and Kelley, of Springfield, Ohio, assignees of H. Fisher, of Alliance, Ohio, for whom J. Dennis, jr., of Washington, D. C., is attorney, who has been notified thereof. A hearing will be granted to the parties on the first Monday in March next.

The testimony must be closed on the Monday preceding the day of hearing. The arguments of counsel must be filed in the office on the day of hearing. Further time for filing arguments can only be granted on application of counsel sustained by sufficient affidavits, in conformity with the provisions of the act of July 4th, 1836. The testimony
808 must be in conformity with the inclosed rules, under the oath or affirmation of persons who are not interested in the question at issue. The main thing to be proved is the date, nature, and extent of the invention made by you.

Yours, respectfully,

ADAM R. REESE,
(Care of Wm. D. Baldwin, esq., Washington, D. C.)

Interference notice to A. R. Reese, Dec. 17th, 1863.

WASHINGTON, D. C., *Dec. 29th*, 1863.

To the COMMISSIONER OF PATENTS:

SIR: I have the official letter of the 17th instant, declaring an interference between my application for a patent for an improvement in harvesters, filed December 3d, 1863, and a similar application of the assignees of Henry Fisher, of Alliance, Ohio.

The point in controversy is the pivoting of the rake-arms, covered by the third clause of my claim. The other clauses of my claim are in no way involved in this interference.

I have, therefore, for the present withdrawn this claim, by the accompanying amendments, and request that the interference be dissolved, and the patent be ordered to issue on the other clauses of claim.

In adopting this course I make no concession of priority, as I intend making the withdrawn claim the subject-matter of a separate application to be filed hereafter.

Respectfully,

ADAM R. REESE,
By his attorney, WM. D. BALDWIN.

Received and filed Dec. 29th, 1863. E. B.

WASHINGTON, D. C., *Dec. 29th*, 1863.

To the COMMISSIONER OF PATENTS:

SIR: I hereby amend the specification of my application for a patent for an improvement in harvesters, filed December 3d, 1863, and
809 now in interference with a similar application of Henry Fisher, of Alliance, Ohio, as follows, viz:

Page 1, erase lines 29 to 23, both inclusive, being the third definition of invention.

Page 7, erase lines 18 to 26, both inclusive, being the whole of the third clause of claim.

Respectfully,

A. R. REESE,
By his attorney, WM. D. BALDWIN.

Received and filed Dec. 29th, 1863. E. B.
Amendment filed Dec. 30th, 1863. A. M. S.

UNITED STATES PATENT OFFICE,
December 31st, 1863.

SIR: The interference declared 17th instant, between the applications of A. R. Reese and Messrs. Fisher, Whiteley, Fassler, and Kelly, for alleged improvements in harvesters, is hereby dissolved at the request of counsel for Reese.

Respectfully, etc.

A. A. REESE,
(Care of Wm. D. Baldwin, esq., Washington, D. C.)
A. M. S., 16.

Office to A. R. Reese. Dec. 31st, 1863.

U. S. PATENT OFFICE,
January 6th, 1864.

SIR: Your application for letters patent for alleged improvement in harvesters has been examined, and it is found that your invention is substantially anticipated in the patents of R. Hoffhein, November 3d, 1863; Samuel Johnston, November 4th, 1862; and Robert Brown, June 18th, 1861. A patent is therefore refused to you.

Respectfully, etc.

ADAM R. REESE,
(Care of William D. Baldwin, esq., Washington, D. C.)
A. M. S., 16.

Brief of A. R. Reese. Jan. 6th, 1864.

810 WASHINGTON, D. C., *January 12th*, 1864.

To the COMMISSIONER OF PATENTS:

SIR: I have the official letter of the 6th instant, rejecting my application for a patent for an improvement in harvesters.

The accompanying amendment will avoid all the references except the patent of R. Hoffheins of November 3d, 1863, with which I request that an interference be declared should he, after due notice, decide to contest my claim.

Respectfully,

A. R. REESE,
By his attorney, WILLIAM D. BALDWIN.

Letter received and filed Jan. 12th, 1864. A. M. S.

WASHINGTON, D. C., *January 12th*, 1864.

To the COMMISSIONER OF PATENTS:

SIR: I hereby amend the specification of my application for a patent for an improvement in harvesters, filed December 3d, 1863, by inserting the words *["and rotating on a vertical axis, or one nearly so"] between "finger-beam" and "substantially," in line 6, page 7, thereof.

Respectfully,

A. R. REESE,
By his attorney, WILLIAM D. BALDWIN.

Amendment filed Jan. 12th, 1864. A. M. S.

U. S. PATENT OFFICE,
February 24th, 1864.

SIR: Agreeably to your request of the 12th ultimo, in the matter of your harvester application, Mr. Hoffhein, whose patent of November 3d, 1863, was cited by the office as showing the anticipation of the first clause of your claim, has been notified that, if he desires to contest the question of priority with you he must file an application for a patent for the alleged improvement within two months from this date.

811

Respectfully.

A. R. REESE,
(Care of William D. Baldwin, esq., Washington, D. C.)

A. M. S., 18.

Office to A. R. Reese. February 24th, 1864.

WASHINGTON, A. D., *March 20th*, 1866.

To the COMMISSIONER OF PATENTS:

SIR: I hereby amend the specification of my application for a patent for an improvement in harvesters, filed December 3d, 1863, as stated in the accompanying paper, and request a re-examination of the claim as amended.

The specification, amendments, and their drawing are herewith returned.

Respectfully, yours,

A. R. REESE,
By his Att'y, WM. D. BALDWIN.

WASHINGTON, *March 20th*, 1866.

To the COMMISSIONER OF PATENTS:

SIR: I hereby amend the specification of my application for a patent for an improvement in harvesters, as follows:

Page 1, erase lines 15 to 28, both inclusive, and, in lieu thereof, insert the following:

† "My invention relates to that class of two-wheeled hinge-joint harvesters in which a series of arms revolving on a vertical axis, or one nearly so, are so arranged as to conform to the undulations of the platform, and to serve the purposes both of a reel and of a rake; and its object is so to arrange the mechanism as to permit a driver to ride on the machine without danger of being struck by the rake, to which end the improvement herein claimed consists—

"In combining with a two-wheeled hinge-joint harvester a com-

* Erased in original.
† Part in bracket erased in the original. A inserted.

bined reel and rake, consisting of a series of arms revolving on a
812 vertical axis, or one nearly so, mounted upon the finger-beam or platform so as to conform to the undulations of the platform, and driven from the main frame, said rake-arms being so controlled by a guide-cam as to be nearly vertical when passing over the main frame, whereby I am enabled to locate the driver's seat upon the main frame outside of the path described by the rake and thus avoid all danger of striking him, substantially as hereinafter described.

"My invention further consists in an X-shaped tubular frame for connecting, bracing, and supporting the rake and finger-beam, as hereinafter described."

Page 2, lines 12 and 13, erase "in this instance."

Page 2, lines 25, erase "in this instance."

Page 4, erase lines 26 to 32, both inclusive.

Page 6, insert, after line 5, the following:

*"By reference to the drawings it will be seen that, while passing over the main frame, these rake-heads and blank-arms are vertical, and that the driver's seat is outside of the seat described by them, thus avoiding all danger of striking the driver."

Page 6, line 11, after "driver" insert †["and even to cause them to revolve without passing over his head."]

Page 7, erase all after line 2, and, in lieu thereof, insert the following:

‡"The combination, in a two-wheeled hinge-joint harvester, of the vertical rake-shaft, mounted upon the finger-beam, and driven from the main frame with the cam-ring and rake-arms, when arranged and operating as described, whereby I am enabled to locate the driver's seat outside of the path described by the rake-arms, as set forth.

."I also claim the combination of the finger-beam and main frame with the tubular X-shaped frame G G[1], as described, for the purpose of supporting and bracing the rake-shaft."

Respectfully,

ADAM R. REESE,
By his attorney, WILLIAM D. BALDWIN.

Amendment filed March 21, 1866.

813 ADAM R. REESE.—HARVESTER RAKE.

This invention will be understood by inspection of the claim and figures.

Ex'd March 21st, 1866.

A. M. S.

Description.

Memorandum of fee paid at U. S. Patent Office.

Inventor, Adam R. Reese. Invention, harvester. Date of payment, April 19th, 1866. Fee, $20. Solicitor', Baldwin & Son.

Patent Office, April 19th, 1866.

UNITED STATES PATENT OFFICE,
Washington, D. C., May 4th, 1864.

SIR: You are hereby notified that your application for a patent for an alleged improvement in harvesters has been adjudged to interfere

* Part in bracket erased in original. B inserted.
† Part in bracket erased in original.
‡ Part in bracket erased in original. C inserted.

with the application of Reuben Hoffheins, of Dover, York County, Pa., for whom Messrs. Mason, Fenwick, and Lawrence, of Washington, D. C., are attorneys, and who has been notified thereof. A hearing will be granted to the parties on the fourth Monday in June next.

The testimony must be closed on the Monday preceding the day of hearing. The arguments of counsel must be filed in the office on the day of hearing. Further time for filing arguments can only be granted on application of counsel, sustained by sufficient affidavits, in conformity with the provisions of the act of July 4th, 1836. The testimony must be in conformity with the inclosed rules, under the oath or affirmation of persons who are not interested in the question at issue. The main thing to be proved is the date, nature, and extent of the invention made by you.

Yours, respectfully,
ADAM R. REESE,
(Care of Wm. D. Baldwin, esq., Washington, D. C.)

Notice interference to A. R. Reese, May 4th, 1864.

814 UNITED STATES PATENT OFFICE,
September 17*th*, 1864.

SIR: In the matter of interference between your application and that of R. Hoffheins, for letters patent for alleged improvement in harvesters, it has been decided that neither party is entitled to a patent, the invention having been abandoned to the public.

For reasons, see decision on file.
Limit of appeal, thirty days.

Respectfully, etc.,
A. R. REESE,
(Care of Wm. D. Baldwin, Washington, D. C.)

A. M. S., 18.

Brief to A. R. Reese, Sept. 17th, 1864.

SMITH, 3–25.

No. 54406.

ADAM R. REESE, of Phillipsburgh, County of Warren, State of New Jersey.

HARVESTERS.

Rec'd December 3d, 1863.
Petition, " "
Affidavit, " "
Specification, " "
Drawings, " "
Model, " "
Cert. dep.
Cash, $15, " "
Add'l fee cert.
" cash, $20, April 19th, 1866.
Examined March 23, 1866. A. M. Smith.
Issue, T. Harland, March 23, 1866.
Patented May 1st, 1866.
Recorded, vol. 195, page 664.

Circular, March 24th, 1866.
WM. D. BALDWIN,
Present.
H. mowing, agr.

815 Interference declared, December 17th, 1863, with application of H. Fisher, Whiteley, Fassler, and Kelly.
Hearing, 1st Monday in March, 1864.
Interference dissolved, December 31st, 1863.
Rejected, January 6th, 1864.
Postponed for two months. See letter February 24th, 1864.
Interference declared, May 4th, 1864, with application (div. B) of R. Hoffhein.
Hearing, 4th Monday in June, 1864.
Hearing postponed to 3d Monday in July, 1864.
" " 2d " Sept., 1864.
Decided that the improvement in interference has been abandoned, and notice sent September 17th, 1864.
Decision affirmed by executors in chief.
Limit of appeal, 30 days, December 13th, 1864.
Affirmed by commissioner, May 16th, 1865.
Reversed by court, September 30th, 1865, and patent ordered to issue to Hoffhein.
Postponed to October 23d, 1865.
Specifications and amendments to me, March 8th, 1866.
WILLIAM D. BALDWIN.
Improvement in harvester rakes. Ex. M. M., C. L. E.

816 *Defendant's Exhibit, Brown File of* 1861.—SAMUEL E. CAVIN, *notary public and special examiner.*

HOFFHEINS }
vs.
RUSSELL. }

Petition.

To the COMMISSIONER OF PATENTS:

The petition of Robert Brown, of Frederick, in the county of Frederick and State of Maryland, respectfully represents:

That your petitioner has invented a new and useful improvement in harvesters, which he verily believes has not been known or used prior to the invention thereof by your petitioner. He therefore prays that letters patent of the United States may be granted to him therefor, vesting in him and his legal representatives the exclusive right to do the same, upon the terms and conditions expressed in the act of Congress in that case made and provided, he having paid thirty dollars into the Treasury, and otherwise complied with the requirements of said act. And he hereby authorizes O. D. Munn, S. H. Wales, and A. E. Beach, of the firm of Munn & Co., or their accredited agents, to act as his attorneys in presenting the application, and in making all such alterations and amendments as may be required, and to receive the letters patent when granted.

ROBERT BROWN.

Oath.

COUNTY OF FREDERICK,
State of Maryland, ss:

On this twelfth day of February, 1861, before the subscriber, a justice of the peace in and for said county, personally appeared the within-named Robert Brown, and made solemn oath that he verily believes himself to be the original and first inventor of the within-
817 described improvement in harvesters, and that he does not know or believe that the same was ever before known or used, and that he is a citizen of the United States.

J. M. HARDING,
Justice of the Peace.

Petition.

To the COMMISSIONER OF PATENTS:

The petition of Robert Brown, of Frederick, in the county of Frederick and State of Maryland, respectfully represents:

That your petitioner has invented certain new and useful improvements in harvesting-machines, which he verily believes has not been known or used prior to the invention thereof by your petitioner.

He, therefore, prays that letters patent of the United States may be granted to him therefor, vesting in him and his legal representatives the exclusive right to the same upon the terms and conditions expressed in the act of Congress in that case made and provided; he having paid thirty dollars into the Treasury, and otherwise complied with the requirements of said act. And he hereby authorizes O. D. Munn, S. H. Wales, and A. E. Beach, of the firm of Munn & Co., or their accredited agents, to act as his attorneys in presenting the application, and in making all such alterations and amendments as may be required, and also to sign his name to the drawings.

ROBERT BROWN.

Oath.

COUNTY OF FREDERICK,
State of Maryland, ss:

On this seventh day of January, 1861, before the subscriber, a justice of the peace in and for said county, personally appeared the within named Robert Brown, and made solemn oath that he verily believes himself to be the original and first inventor of the within described improvements in harvesting-machines, and that he does not
818 know or believe that the same was ever before known or used; and that he is a citizen of the United States.

J. M. HARDING,
Justice of the Peace.

MARYLAND, *Frederick County, sst.:*

I hereby certify that James M. Harding, esquire, before whom the foregoing affidavit was made, and who has thereto subscribed his name, was at the time of so doing a justice of the peace of the State of Maryland in and for Frederick County, duly elected, commissioned, and sworn.

In testimony whereof I hereunto subscribe my name and affix the seal of the circuit court for Frederick County this seventh day of January, A. D. 1861.

[SEAL.] B. G. FITZHUGH,
Clerk of the Circuit Court for Frederick County.

To all whom it may concern:

Be it known that I, Robert Brown, of Frederick in the county of Frederick and State of Maryland, have invented certain new and useful improvements in harvesting-machines, and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings making part of this specification, in which—

Figure 1 is a rear view of a grain-harvester embodying my improvements.

Figure 2 is a plan of the machine as adapted for mowing.

Figure 3 is a section at 1, 1, figure 2.

Figure 4 is a perspective view exhibiting the manner of attaching an additional number of reel-arms.

Figure 5 is a perspective view of one of the pinions hereinafter described.

Similar letters of reference indicate corresponding parts in the several figures.

819 The nature of my invention consists:

1st. In an improved manner of mounting and attaching the rake and finger bar.

*2d. In an improved devise for throwing the cutting mechanism out of gear automatically, or at the will of the operator, as hereinafter explained.

3d. In an improved construction of finger-bar.

4th. In an improved form of adjustable gatherer.

5th. In a novel combination of raising lever and stop.

2d.—(6th.)† In an improved [mode of—erased] [combination of devices for—inserted] attaching the reel or rake to adapt it for any desired number of arms.

A, A, are the driving-wheels carrying cogged rings B, which gear with pinions C, journalled loosely upon the shaft D, so as to impart motion thereto only when the machine is moving forward, and when placed in gear, as hereinafter explained. Reciprocating motion is thence communicated to the cutter E, through the medium of bevel-gears F, G, shaft H, crank-wheel I, and connecting-rod J, in customary manner. The finger-bar K is mounted upon a hollow or divided shaft L, the journals *t* of which surround the journals *h* of the shaft H, and work in boxes M, secured to the main frame of the machine. The shaft L affords also means of attachment for the reel N, the arms of which rests upon a ring, O, and are rotated through the medium of pinion P, crown-wheel Q, and shaft R, in customary manner. By this means the reel is made to follow the rising and falling of the finger-bar, and both may assume any position required by inequalities in the surface of the ground without interfering with the working of the cutter.

When a four-armed reel is employed, one arm is provided with a rake-head, as shown in figure 1. In this arrangement each pair of arms is mounted upon a metal ring, *n*, encircling the shaft R, and secured
820 thereto by a bolt, as represented. When six arms are required, the ring n^1 of the centre pair is constructed with bolt-holes 2 2, set obliquely to the arms, and a bridge, n^2, perforated for the attachment of an arched yoke, n^3, to which the upper pair of arms is secured as clearly shown in figure 4. By this means a reel of either two, four, or six arms may be used, the arms in either case being equidistant and adapted

* Part in brackets erased in original.
† Erased.

to revolve in one plane. In a six-armed reel, two are usually provided with rake-heads.

The pinions C have a limited play longitudinally upon the shaft D, and are, while the machine is in operation, pressed outward by springs, S S, acting through the medium of clutch-levers, T T, fulcrumed at *t t* to the main frame of the machine. In this position the pinions rotate the shaft during the forward motion of the machine, by means of ratchet-teeth or grooves on their outer faces engaging with pins *d* on the shaft, but in backing the machine the oblique backs of the teeth slipping past the pins *d* impart no motion to the shaft. U U are clutch-rods operated by a lever, V, to throw the cutting mechanism out of gear when desired, by withdrawing the pinions C from contact with the pins *d*. To permit this action without preventing the automatic motion of the pinions upon the shaft, as previously explained, the rods U connect with the levers T by elongated slots, as seen at *u*, in Fig. 2, thus enabling the levers to move independently of the rods.

The construction of the finger-bar is exhibited in Fig. 3. K^1 is a rebate in front on the under side of the bar, to afford secure attachment and support for the fingers K. K^2 is a rebate at back on the upper side of the bar to receive the platform K^3, without causing it to project above the top of the bar, and (when the platform is removed for mowing) to allow the grass to fall with greater freedom.

W is the gatherer (represented by red lines in Fig. 2). It consists of a bar, pivoted at *w* to the frame of the machine, and adjustable at any desired angle, to deflect the grain toward the cutter. 821

X is a lever fulcrumed at *x*, to the frame of the machine, and connected with the finger-bar by a link, Z. Y is a stop, against which the lever rests when not held by the operator.

The operation of the machine may be understood from the foregoing description of its construction.

Parts not specifically described may be constructed in any suitable manner.*

What I claim as new, and desire to secure by letters patent, is—

†1st. The combination of the shafts H and L, turning upon concentric journals *h* and *l*, as and for the purposes set forth.

‡2d. The slotted clutch-rods U *u*, constructed and operating as set forth, in combination with the spring levers S T and the clutch pinions C.‡

3d. The construction of the finger-bar with rebates k^1 and k^2, as and for the purposes herein shown and described, in connection with the fingers *k* and platform k^3.‡

4th. The gatherer w, pivoted at *w*, and adjustable in angle, as and for the purposes herein described.‡

5th. The described combination of the lever X, stop Y, and link *z*, with the finger-bar *k*, for the purposes explained.‡

2d.—(6th.)—The reel attachments *n* n^1 n^2 n^3, constructed, combined, and arranged in the manner specified to enable the attachment of any desired number of arms.

ROBERT BROWN.

Witnesses:
A. L. EADER.
MARCELLUS DORSEY.

Filed Jan. 12, 1861. J. C. G.

* Insert B. † Erased, and insert B. ‡ Erased in original.

822 UNITED STATES PATENT OFFICE,
January 19th, 1861.

SIR: Your application for letters patent for alleged improvement in harvesters has been examined.

The first clause of your claim is found to be substantially anticipated in the patents of C. Bullock, June 5th, 1860, and A. Elliott, April 1st, 1856; the second clause in the patents of O. R. Chaplin, January 10th, 1860, and R. Bean, August 25th, 1855; the third clause in the patent of A. M. Hall, December 23d, 1856; the fourth in the patent of J. B. McCormick, April 27th, 1858; the fifth in the patents of M. G. Hubbard, December 7th, 1858, and February 22d, 1859, and the last clause in the patent of O. Dorsey, June 24th, 1859.

Your application is therefore necessarily rejected.

Respectfully, etc.

ROBERT BROWN,
(Care of Munn & Co., Washington, D. C.)

Brief of Robert Brown, Jan. 19, 1861.

WASHINGTON, *May 29th*, 1861.

Hon. D. P. HOLLOWAY, *Commissioner of Patents:*

SIR: We herewith return to the office the original specification and one drawing of Robert Brown's harvester, together with a new oath and sundry amendments, in connection with which the case is very respectfully submitted for reconsideration.

The claim is now presented in two clauses, the first of which is explained at some length in the specification, and will, we trust, be found to present a clearly patentable subject without necessity of further argument.

In regard to the last clause we have only to submit that the applicant was practically familiar with the "Dorsey rake" prior to making his application, and was also aware that reels of this class had been used with 3, 4, 5, and 6 arms.

The subject of the improvement claimed is to make the reel readily convertible, so that either 4 or 6 arms can be used, which arms
823 are in either case equidistant, and all rigid in the plane in which they rotate. The claim is restricted to a peculiar combination of parts employed to effect this result.

We have the honor to be, sir, your obedient servants,

MUNN & CO.

Received May 30, 1861. Brief.

The specification of Robert Brown's harvester is hereby amended as follows:

1st. By erasing the last eight lines of page 2 and the first two lines of page 3.

2d. By substituting "2d" for "6th" in third line of page 3. [Substituted.]

3d. By erasing the words ["mode of"]* in fourth line of page 3, and inserting instead ["combination of devices for."—Inserted.]

4th. By erasing from the word "The" in first line of page 4, to the word "which" in the third line of the same, both inclusive, and inserting instead the following:

* Erased.

*"The vertical shaft of the reel is journaled in a frame, N′, bolted to flanges, l′, projecting upward from the shaft L. The arms N of the reel."

5th. By inserting the following at the end of page 7:

†"I am aware that it is common to journal shafts within sleeves for various purposes, and also that the finger-bar in harvesting-machines has been hung upon the crank-shaft. In my machine the finger-bar is not hung upon the crank-shaft, but secured to an independent hollow shaft, which is journaled in stationary bearings on the main frame of the machine, and to which shaft the frame supporting the reel is also rigidly secured. The crank-shaft is journaled within the journals of the said hollow shaft, so that a strain upon the latter, occurring through the finger-bar, will not affect the
824 crank-shaft. By securing the reel standards upon the shaft of the finger-bar without any connection directly with the main frame, and transmitting motion in the manner hereinbefore explained, the reel is made to work equally well and at equal speed in any position of the bar, and may be removed with great facility to change the machine from a reaper to a mower."

6th. By erasing the first clause of the claim, and inserting instead the following:

‡"1st. Securing both the finger-bar and the rake-frame to a hollow shaft, L, the journals (*l*) of which run in bearings (M) in the main frame, and themselves constitute bearings for the journals (*h*) of the crank-shaft, all as herein shown and explained, and for the purposes set forth."

7th. By erasing the 2d, 3d, 4th, and 5th clauses of the claim, and substituting the ordinal ["2d"—inserted] for "6th" in the last clause.

ROBERT BROWN,
Per MUNN & CO.,
Attorneys.

WASHINGTON, *May 29th*, 1861.

Amendment received and filed May 30, 1861.

No. 1552—whole No. 32556.—105–9.

Robert Brown, of Frederick, county of Frederick, State of Maryland, harvester. Oath renewed.

Received, January 12th, 1861.
Petition, January 12th, 1861.
Affidavit, January 12th, 1861.
Specification, January 12th, 1861.
Drawing, January 12th, 1861.
Model, January 12th, 1861.
Caveat, September 13th, 1859.
Cash $10, January 12th, 1861.
Examined, May 31st, 1861, A. M. Smith.
Issue, Shugert, June 1st, 1861.
Patented, June 18th, 1861.
Recorded, vol. 130, page 346.
H.
Mowing; age, ——
Munn & Co. W. D. C.

* Inserted at A. † Inserted at B ‡ Inserted at C.

825 Rejected, January 19th, 1861.
Spec. and one dr'g to us, January 23d, 1861.

MUNN & CO.

Ex. J. A. W. M. M.—Improvement in harvesters.

Defendant's Exhibit, Brown File of 1863.—SAMUEL E. CAVIN, *notary public and special examiner.*

HOFFHEINS *vs.* RUSSELL.

Petition.

To the COMMISSIONER OF PATENTS:

The petition of Robert Brown, of Frederick, in the county of Frederick and State of Maryland, respectfully represents:

That your petitioner has invented certain new and useful improvements in grain and grass harvesters, which he verily believes have not been known or used prior to the invention thereof by your petitioner. He therefore prays that letters patent of the United States may be granted to him therefor, vesting in him and his legal representatives, the exclusive right to the same upon the terms and conditions expressed in the act of Congress in that case made and provided; he having paid fifteen dollars into the Treasury, and complied with the other provisions of the said act.

He further prays, that you will recognize as his true and lawful attorneys, M. C. Gritzner and E. Cohen, of Washington City, jointly and separately, whom he hereby authorizes to alter and modify the within specification and claims, to withdraw the application, should it be deemed advisable, to receive the patent when granted, and to perform every act in the premises requisite and necessary, as fully as I might do if personally present.

ROBERT BROWN.

826 *Oath.*

STATE OF MARYLAND,
County of Frederick, ss:

On this first day of October, 1862, before me, the subscriber, a justice of the peace, in and for the county and State aforesaid, personally appeared the within-named Robert Brown, and made solemn oath that he verily believes himself to be the original and first inventor of the within described improvement in grain and grass harvesters, and that he does not know or believe that the same was ever before known and used, and that he is a citizen of the United States.

J. M. HARDING,
Justice of the Peace.

To all whom it may concern:

Be it known that I, Robert Brown, of Frederick, in the county of Frederick and State of Maryland, have invented certain new and useful improvements in grain and grass harvesters, and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, in which—

Fig. 1 represents a perspective view of said harvesting machine.
Fig. 2 represents a longitudinal vertical section through the same.
Figs. 3, 4, 5 represent detached views, hereafter to be referred to.
Figs. 6, 7, 8 represent views of the cutting apparatus of my machine.

[My invention consists, first, in leaving the rear end of the main frame of a harvesting machine open, so as to attach thereto conveniently the swinging frame to which the cutting apparatus is secured.*]

827 †Also in securing the wheel axles of the driving-wheels to the main frame by means of stirrup-bolts.

827 ‡Also in the peculiar construction of the grain-wheel attachment, for the purpose of adjusting the height of the cutting apparatus.

§[Also in a self-clearing devise attached to the sickle-blades of the cutting apparatus] for the purpose of clearing the guard-fingers from damp grass or other material which tends to clog the machine.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation:

A represents the main frame of the machine, to which the tongue or pole B is rigidly attached; the braces C which support the seat D are also secured to this frame. The main frame A consists of the longitudinal bars 1, the shape of which is shown in cross-section at Fig. 4; these side pieces are bolted to the front cross-tie 2, and are braced together near the rear by means of the braces *a b*; by this means I obtain a frame of a very simple and cheap construction, which may be made of wrought iron, and therefore of comparatively light material; but the principal advantage in this construction is that the rear end of the frame is open, and therefore the swinging frame E, to which the cutting apparatus is attached, may be easily secured at almost any point on the bars 1, there being nothing to obstruct its movement at the rear end of the frame. The braces *a* and *b*, which are intended to impart steadiness to the main frame, do not interfere with the action of the frame, E, as the brace *a* is above its limit of motion, and the brace *b* prevents it from moving downward beyond its intended limit. The swinging frame E is hung to the stationary shaft or bar F on which it turns on being raised or lowered by passing over uneven ground, it being supported in its lowest position by the brace *b*, which prevents it from descending further than it is intended, according to the construction of the machine. The finger-bar G is secured to the head *d* of the shaft H by means of the bolt *e*, and said finger-bar

828 may be raised and lowered by the lever arrangement commonly used in harvesting machines for that purpose, in connection with a rope or chain, which is secured to the shoe-plate I of the finger-bar, said lever arrangement and one of the driving-wheels being left off on the drawings, as they would cover other parts which it is essential to show thereon.

The axles K of the driving-wheels are secured to the stationary frame A in the following manner: the upper end of the axle is flattened so as to fit against the horizontal part *x* of the bar 1, while the butt end comes up close to the vertical part *y* of said bar; a stirrup-bolt, *g*, which enters a corresponding groove on the circumference of the axle, is then passed around it, and is secured to the part *x* by means of the screw-nuts, S; the axle K being snugly fitted on the parts *x* and *y*, cannot move sidewise, and constitutes a cheap and simple construction for harvesting machines, reducing the weight of the machine by using two short axles instead of one long one.‖

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* Erased by amendment filed July 28th, 1863.
† Insert A and erase, see amendment filed July 24th, 1863.
‡ Erased July 28th, 1863.
§ Erase and insert D of amendment filed July 28th, 1863.
‖ Insert B, amendment filed July 24, 1863.

To raise and lower the grain end of the cutting apparatus, for the purpose of regulating the length at which the grain is to be cut, I make the grain-wheel L adjustable, and use the following devise: M represents the shaft of the swivel-wheel; to this shaft is secured the slotted arc *h;* the piece *i* which supports the grain-wheel L is pivoted at *k* to the shaft M and its arm 3, may be secured at any desired position on the arc *h*, by means of the set-screw 4, which passes through the slot of the arc *h;* thus the grain-wheel may be raised or lowered, to cut the grain high or short, and may be secured in any position by means of the set-screw 4.

The cutting apparatus of my machine is represented in Figs. 6, 7, and 8. G represents the finger-bar, to which the guards O are secured; they have a wide opening, *m*, to the rear of the cutting apparatus, which extends backwards to the finger-bar; in Fig. 7 the blades of the cutting apparatus are represented in a reversed position;
829 *n* represents the cutters or sickle-knives for cutting the grain; *o* represents the sickle-bar, and *p* represents cutters, which are secured to the lower side of the blades *n*. When the sickle-bar and knives are placed in their proper position within the guard-fingers the cutters *p* work within the groove in the guard, which is formed by the projections *q* and *r*, and the grass which tends to clog the machine works out under the cutters, and to the rear of the cutting edges, and passes out through the openings *m*, which are constantly kept clear by the action of the cutters *p*, which work against the edges *u* of the guard-fingers, thus preventing the machine from clogging by damp grass or other material getting in between the cutting apparatus.

Having thus fully described the nature of my invention, what I claim herein as new, and desire to secure by letters patent, is:*

†(1.) Constructing the main frame of a harvesting machine in such a manner as to leave the rear end open for the purpose of securing the swinging frame within the main-frame, when constructed and operated substantially in the manner and for the purposes herein described.

(2.) I also claim the method herein described, of securing the axles of the driving wheels to the main-frame of a harvesting machine, substantially and in manner and for the purpose set forth.

(3.) I also claim the combination and arrangement of the swivel-grain wheel with the slotted arc, for the purpose of adjusting the height of the cutting apparatus, when constructed and arranged substantially in the manner and for the purpose set forth.

(4.) I also claim, in combination with a guard-finger having openings, *m*, under and to the rear of the cutting edges of the blades, the cutters *p*, at the lower side of the blades *n*, when constructed
830 and arranged substantially in the manner and for the purpose set forth.

ROBERT BROWN.

Witnesses:
A. L. EADER.
J. M. HARDING.

OCTOBER 1ST, 1862.

Received and filed Jan. 14, 1863.—E. E.

*Insert C and erased.
†Part in brackets erased in the original.

UNITED STATES PATENT OFFICE, *January 21st*, 1863.

SIR: Your application for letters patent for alleged improvement in harvesting machines has been examined, and it is found that the first clause of your claim is distinctly anticipated in the patents granted A. L. Darby, September 17th, 1861, and W. K. Miller, July 2d, 1861. The second claim is anticipated in the patents of W. A. Wood, April 15th, 1862, and C. Newhall, July 29th, 1862. The improvement covered by this clause would, strictly considered, be regarded as the proper subject-matter of a separate application, as it has no necessary connection with the harvesting machine; but in view of the apparent lack of novelty, the office has not thought necessary to require a division of the application at this time. The third clause is anticipated in the patent of Penn, Geiss, & Brosius July 8th, 1862, and the fourth clause in the patents of J. Urmy, July 24th, 1855, and P. Manny, August 25th, 1860. A patent is therefore necessarily refused.

Respectfully, etc.,
ROBERT BROWN,
A. M. S., 16. (Care of Messrs. Gritner & Cohen, Washington, D. C.

Office letter to Robert Brown, Jan. 21, 1863.

WASHINGTON, D. C., *July 24th*, 1863.

To the COMMISSIONER OF PATENTS:

I hereby amend my specification for improvement in harvesting machines by canceling the first and third clauses of my claim; also by erasing lines 23, 24, and 25 on page 1, and by substituting therefor the following:

831 *"In the combination with the angular side pieces of the main frame of two short wheel-axles, which support the driving-wheels of the machine."

Also by inserting after line 5, on page 4, the following:

†"This feature is of great importance in harvesting machines in which a hinged cutter-bar frame is used within the main frame, as by the application of the two short axles which extend outside of the main frame no part of said axles obstruct the free motion of the inner hinged frame."

Also by erasing the second and fourth clauses of my claim, and by substituting therefor the following:

‡"I claim in combination with the angular side-bars 1, of the main frame A, and the inner hinged frame E, the two short wheel axles K, when constructed and arranged substantially in the manner and for the purposes herein described."

"I also claim, in combination with the open guard-fingers having spaces, *m*, under and to the rear of the cutting edges of the blades, the clearers *p* at the lower side of the blades when said clearers operate above the spaces *m*, and when constructed and arranged substantially in the manner herein described."

I respectfully call your attention to the accompanying explanation.

Respectfully,
ROBERT BROWN,
By his Attorneys, GRITZNER & COHEN.

*Insert A. †Insert B. ‡Insert C.

WASHINGTON, D. C., *July 24th*, 1863.

To the COMMISSIONERS OF PATENTS:

The amendments made in the specification and claim relating to the second original claim (the short axles) fully explain the features and object of the invention.

In relation to the fourth claim (guard-finger), I have to state that the invention materially differs from those embodied in the references given by the office.

832 Urmy's patent, of July 24th, 1855, has a guard-finger and clearer, resembling, in some parts, my invention, but the main feature of my invention, viz, the space or opening *m*, under the clearers, is not in it, this feature being of great importance for the escape or discharge of grass or other material which tend to clog the cutter. In the other reference, P. Manny, August 25th, 1857, the clearer and guard-finger is of an entirely different construction, said guard-finger being composed of two separate parts; the upper part has a forked base, the branches of which are secured to the finger-bar, while the lower part extends beneath the sickle, and its base is secured to the finger-bar between the branches of the upper part. It is, therefore, plain that the space between the branches of the forked guard-finger is neither of the constructions nor for the object of the space *m* in my guard-finger, as it must be located below the clearers for the purpose stated in my specification.

Respectfully,

ROBERT BROWN,
By his Attorneys, CRITZNER & COHEN.

Letter filed July 24, 1863. S.

WASHINGTON, D. C., *July 28th*, 1863.

To the COMMISSIONER OF PATENTS:

We hereby amend the specification of Robert Brown for improvement in harvesting machines by cancelling the words "in leaving the" in line 18 of page 1 of said specification; also by cancelling the lines 19, 20, 21, 22, 26, 27, and 28 of page 1; also by erasing on page 2 line 1 and line 2 to the words "apparatus inclusive," and by substituting therefor the following:

* "Also in the combination of clearers which are attached to the lower sides of the sickles, with the open guard-fingers having spaces under and to the rear of the cutting edges of the blades."

Respectfully,

CRITZNER & COHEN,
Attorneys for Robert Brown.

(Amendment filed July 28, 1863.)

833 UNITED STATES PATENT OFFICE,
July 27th, 1863.

SIR: The specification of your harvester application is again returned to you for such amendment of the recital of the nature of the invention as will make it agree with the amended claim.

Respectfully,

ROBERT BROWN,
(Care of Critzner & Cohen, Washington, D. C.)
A. M. S., 16.
Office to R. Brown, July 27, 1863.

* Insert D.

Memorandum of fee paid at United States Patent Office.

Inventor, Robert Brown. Invention, harvester, $20 cash. Date of payment, October 16th, 1863. Fee, $20. Solicitors, Gritzner & Cohen.

No. 40395.—27–10.

ROBERT BROWN, of Frederick, county of Frederick, State of Maryland.

Grain and grass harvester.

Rec'd January 14th, 1863.
Petition, " "
Affidavit, " "
Specification, " "
Drawings, " "
Model, " "
Cert. dep.
Cash, $15, " "
Add'l fee cert.
" cash $20, October 16th, 1863.
Examined, Chas. G. Page, July 31st, 1863.
Issue, Hayes, August 3d, 1863.
Patented October 27th, 1863.
Recorded, vol. 155, page 15.
Circular August 4th, 1863.
GRITZNER & COHEN, present.
834 H. mowing agricul.
Rejected January 21st, 1863.
Papers and one ar. to us, February 17th, 1863.
GRITZNER & COHEN.
Specification returned July 27th, 1863.
Improvement in harvesters.—Ex. J. A. W., M. M.

Defendants' Exhibit, Aultman's Revised Patent of 1859.—S. E. CAVIN, *notary public and special examiner.*

HOFFHEINS
vs.
RUSSELL.

REISSUE No. 766.

The United States of America to all to whom these letters patent shall come:

Whereas Lewis Miller, of Canton, Ohio, has alleged that he has invented a new and useful improvement in harvesters (for which letters patent were issued to C. Aultman & Co., assignees of said Miller, dated May 4th, 1858, which letters having been surrendered by said C. Aultman & Co., the same have been cancelled and new letters ordered to issue to them on seven amended specifications), which he states has not been known or used before his application; has made oath that he is a citizen of the United States, that he does verily believe that he is the original and first inventor or discoverer of the said improvement, and

that the same hath not, to the best of his knowledge and belief, been previously known or used; has paid into the Treasury of the
835 United States the sum of thirty dollars, and presented a petition to the Commissioner of Patents, signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose:

These are, therefore, to grant, according to law, to the said C. Aultman & Co., their heirs, administrators, or assigns, for the term of fourteen years from the fourth day of May, one thousand eight hundred and fifty-eight, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said Lewis Miller, in the schedule hereunto annexed, and is made part of these presents.

In testimony whereof, I have caused these letters to be made patent, and the seal of the Patent Office has been hereunto affixed.

Given under my hand at the city of Washington, this nineteenth day of July, in the year of our Lord one thousand eight hundred and fifty-nine, and of the Independence of the United States of America the eighty-fourth.

JACOB THOMPSON,
Secretary of the Interior.

Countersigned and sealed with the seal of the Patent-Office.
[SEAL.] WILLIAM D. BISHOP,
Commissioner of Patents.

The schedule referred to in these letters patent and making part of the same.

To all whom it may concern:

Be it known that I, Lewis Miller, of Canton, in the county of Stark and State of Ohio, have invented certain new and useful im-
836 provements in machines for harvesting grain and grass, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which make part of this specification, in which—

Fig. 1 represents a view in perspective of the machine as arranged for mowing.

Fig. 2 represents a front elevation of the machine; the black lines showing the finger-beam resting upon the ground in the position it will occupy when the machine is mowing on a level surface; the red lines showing the position of the finger-beam when mowing on an uneven surface, with its left end raised to conform thereto; and the blue lines showing the finger-beam raised off, and held parallel to the ground, by means of a hand-lever to pass over an obstacle.

Fig. 3 represents by the black lines a front elevation of the machine with the finger-beam folded over upon the frame in a compact manner; the red lines show the finger-beam raised on end, preparatory to being lifted by the hand-lever, and turned over upon the frame; and the blue lines show the finger-beam almost raised up and turned over upon the frame.

Fig. 4 represents a view of the under side of the main frame and certain parts connected therewith, but showing more particularly the arrangement of the brace for supporting the coupling-arm.

Fig. 5 represents on an enlarged scale a view of one side of a portion

of the connecting-rod which transmits motion from the crank to the cutter.

Fig. 6 represents a front view of the quadrant-lever for lifting, and the ratchet-teeth and detent for holding up the finger-beam when raised; also a fragment of the adjacent part of the frame, detached from the machine.

Fig. 7 represents a similar view of the same parts, the quadrant-lever and its ratchet-teeth being in the position they occupy when turned aside to disengage the teeth from the detent, preparatory to raising or lowering the finger-beam.

837 Fig. 8 represents a view of the side of the quadrant having the ratchet-teeth thereon; and

Fig. 9 represents a vertical section at the line *x x* of Fig. 1, showing the knuckle of the joint connecting the finger-beam and coupling-arm.

That side of the machine on which the finger-beam projects when on the ground in the position shown in Fig. 1, I call the right side, the other I call the left side.

In operating mowing-machines it often happens that the cutter becomes bound, more or less, in the slots of the guard-fingers by reason of grass wedging in between the sides of the slots in the fingers and the sides of the cutter; and in working the cutter under such circumstances great force has to be exerted, which force being sustained by the bearing of the crank is apt to overstrain and work loose that part of the frame which sustains the bearing; and if the bearing of the crank be supported by a hanger or bracket projecting from the frame, this liability to work loose is greatly increased. If the finger-beam be drawn by a coupling-arm hinged to a hanger or bracket on the frame, the force required to drive the cutter acts on the hanger or bracket which carries the hinge of the coupling-arm, in one direction, with the same force with which it acts in the opposite direction on the hanger or bracket which carries the bearing for the journal of the crank; and as the direction in which these forces act upon the hangers or brackets is reversed with every reversal of the motion of the cutter, it is found to be difficult, if not impossible, especially in a wooden frame, to fasten these hangers so that they will not work loose.

This working of the hangers impairs the durability of the machine, but is objectionable chiefly because it varies the stroke of the cutter, and thereby impairs its shearing action, and thus lessens the efficiency of the machine; and, therefore, it is of great importance to remedy this defect; and my contrivance for that purpose is the subject of this patent, and it consists in combining the bearing for the journal
838 of the crank and the hinge of the coupling-arm, with a hanger or bracket, which is made common to both; and, therefore, any irregular or accidental yielding or vibration of the crank is imparted equally to the coupling-arm, finger-beam, and cutter, thus preventing any of the derangements of the stroke or action of the cutter, which are inevitable when the crank-bearing and the hinge of the coupling-arm are supported on separate brackets; besides, this arrangement lessens the cost of construction and the weight to be drawn by making one of the two hangers or brackets heretofore used perform the duty of both.

The accompanying drawings represent a mowing-machine having its main frame (A A^1 A^2 A^3 A^4 A^5) supported by an axle (C), and a pair of wheels (B and B^1) and having a tongue (Y) for the horses to draw it by, projecting from the front of the main frame.

A finger-beam (M) projects from the right side of the frame, to which

it is connected by an intermediate coupling-arm (L), hinged at its right end to the finger-beam, and at its left end to a hanger or bracket (H), projecting some distance downward from the under side of the main frame. This hanger, in addition to supporting the hinge (*b*) of the coupling-arm, also supports the bearing (*c*) for the journal of the crank, which impart a vibratory motion to the cutter (K) through a connecting-rod (J).

The hinge and bearing are placed as near as possible in order that the raising and lowering of the coupling-arm may be on an axis of motion as near as may be coincident with the axis of motion of the crank, and thereby prevent any injurious interference with the strokes of the cutter from the movements of the coupling-arm.

The parts of the machine which have not been particularly described do not relate to the subject-matter of the claim under this patent, and need not therefore be further referred to here.

What I claim under this patent as my invention, is:

839 The combination of the crank and the bearing for its journal, the cutter, the coupling-arm, and the hinge of its inner end, with a hanger which is made the common support for the hinge of the coupling-arm and the journal of the crank, arranged and operating substantially as herein set forth.

In testimony whereof I have hereunto subscribed my name.

LOUIS MILLER.

Witnesses:
S. HANKES,
JAS. S. TOWNER.

Ex'd.—A. R.

Defendants' Exhibit, Young File.—S. E. CAVIN, *notary public, and special examiner.*

HOFFHEINS
vs.
RUSSELL.

Petition.

To the COMMISSIONER OF PATENTS:

The petition of McClintock Young, jr., of the city and county of Frederick and State of Maryland, respectfully represents that your petitioner has invented a new and useful improvement in harvesting-machines, which, he verily believes, has not been known or used prior to the invention thereof by your petitioner. He therefore prays that letters patent of the United States may be granted to him therefor, vesting in him and his legal representatives the exclusive right to the same upon the terms and conditions expressed in the act of Congress in that case made and provided, he having paid thirty dollars into the Treasury, and complied with other provisions of the said act.

840 He further prays that you will recognize as his agent and attorney, A. B. Stoughton, whom he hereby authorizes and empowers to alter and modify the within specification and claim; to receive the patent when granted; to receive back any money which he may be entitled to withdraw from the Treasury, and to receipt for the same, and, in general, to demand and exercise all the rights and privi-

leges that he would be entitled to if personally present and acting in the premises.

McCLINTOCK YOUNG, JR.

Oath.

COUNTY OF WASHINGTON,
District of Columbia, ss:

On this sixth day of April, A. D. 1861, before the subscriber, a notry public in and for the said county, personally appeared the within-named McClintock Young, jr., and made solemn oath that he verily believes himself to be the original and first inventor of the within described improvement in harvesters, and that he does not know or believe that the same was ever before known or used, and that he is a citizen of the United States.

[SEAL.] EDW. F. BROWN,
Notary Public.

To all whom it may concern:

Be it known that I, McClintock Young, jr., of Frederick, in the county of Frederick and State of Maryland, have invented certain new and useful improvements in harvesting-machines, and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings making a part of this specification, in which—

841 Fig. 1 represents in perspective so much of a harvesting-machine as will illustrate my invention.

Fig. 2 represents a top plan; and

Fig. 3 represents a sectional elevation of the same.

Similar letters of reference where they occur in the separate figures denote like parts of the machine in all the drawings.

My invention relates to a combined reaping and mowing machine, or, in other words, to a harvesting-machine capable of being converted into a reaping or mowing machine as the case may be. And my invention consists, first, in the manner of connecting the platform and cutting apparatus with the main frame, so that they may rise and fall in conforming to the surface of the ground, independent of each other. It consists, secondly, in combination with the platform and main frame so hung, the main wheels of a rake, and rake-driving mechanism, that will admit of such independent movements, and yet remain in working gear with each other. And it consists, thirdly, in making the finger-bar in two sections of different lengths, the long section being attached to the main frame, and the short section to the platform, so that when the platfor is removed to convert the machine into a grass mower the finger-bar shall be shortened in length to the extent of the short section attached to the platform.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same in connection with the drawings.

A B represents two supporting wheels on an axle, C, the wheel B being fast on the axle so as to make it a drive-wheel also. On the axle C is supported a frame, D, to which the tongue E is attached, and to the tongue E, at or about the point *a* thereon, is connected by a shackle or link connection, s^1 (Fig. 3), a beam, F, that passes underneath the axle C, and thence rearward to support the platform, cutting apparatus, rake, and rake-driving mechanism, as will be explained. A brace,

c, extends upwards from the beam F, which passes up through
842 a notch, mortise, or guide, on the main frame D, so as to keep this beam in line, whilst it, or the main frame, are free to move vertically as the ground over which they are passing may demand.

The platform G is fastened to a platform beam or support, H, which is oblique to and behind the finger-bar, and at the outer end of this support is the outside supporting wheel, I (Fig. 2). The finger-bar is made in two sections, J and J^1, the one J, which is much the longer one, being secured to the beam F, and the short section J^1, to the platform G. The object of this being to have a short finger-bar and cutter when mowing and a longer one when reaping; and to make the change without removing or detaching the finger-bar from the main frame, to apply another in its place. On the end of the platform beam H, next the stubble, there is a pillar-block box, K, in which the journal of a bevel-wheel, L, is supported and turns; and upon this pillar support K there is a horizontal arm support, *o*, on which as a journal and slide the bevel-pinion M is supported and turns. To the pinion M, is connected by a gimbal-joint, as at *d*, Fig. 1, one end of a driving-shaft, N, the other end whereof is supported in a bearing-block, *o*, upon the projected end of the axle C, and the extreme end of the shaft N has a bevel-pinion P upon it which is turned by the bevel-wheel Q on the axle C. This arrangement of driving-gear, though shown outside of the supporting-wheel A, may be put inside, or between the wheels A B. The bevel-pinion M turns the bevel-wheel L; and on top of this wheel L is pivoted the rake-shank, R to which the rakes S S are connected, and by which they are rotated is a cam ledge, under which hooks or arms, *e*, on the rake-stocks take, to draw the rakes down to, and make them traverse close over the platform, the one going down, raising up its fellow high enough to pass over the wheels and then drop onto, or close to, the platform.

When this machine is arranged for mowing, everything is taken off except the beam F and the finger-bar J, and which may be done by
simply loosening up a screw, *f*. When made into a reaper, a sad-
843 dle-block, F^1, is added to the beam F, which has studs or dowels, *g h*, in it, one for holding the platform the other for holding itself in connection with the screw *f* to the beam F. Where the sections of the finger-bar butt together there may be any suitable kind of fastening to keep them together and in line. For cutting grain the finger-bar and cutters may be from five to six feet in length. But for grass a four feet swath, or four and a half feet, is found to be enough, and for this object I make my finger-bar in sections.

Having thus fully described my invention, what I claim is, first, connecting the finger-bar of a grass-harvesting machine to the main frame by means of a beam, F, linked or hinged to and drawn by the tongue, and prevented from swaying latterly by the brace *c* and main frame P, as set forth.

I also claim, in combination with said beam F so hung and supported, a platform, rake, and rake mechanism, arranged and connected thereto, to operate as set forth, for converting the machine into a self-raking grain harvester, substantially as described.

I also claim making a finger-bar in two sections, one long one and one short one, the short section being connected to the platform and removable with it, so that as the platform is attached to adapt the machine to harvesting grain, or removed to adapt it to the cutting of grass, the finger-bar shall be correspondingly lengthened and shortened, as

has been found advantageous in harvesting the different materials, substantially as described.

McCLINTOCK YOUNG, JR.

Witnesses:
A. B. STOUGHTON.
JULIUS HIRSCH.

Filed May 20th, 1861.—J. F. G.

844 No. 1803—whole No. 32807.

McClintock Young, jr., of Frederick, county of Frederick, State of Maryland, harvesters.
Received, May 20th, 1861.
Petition, May 20th, 1861.
Affidavit, May 20th, 1861.
Specification, May 20th, 1861.
Drawing, May 20th, 1861.
Model, May 20th, 1861.
Certificate deposited.
Cash, $15, May 20th, 1861.
Cash, $20, June 28th, 1861.
Examined, June 22d, 1861, A. M. Smith.
Issue, J. L. Hays, June 26th, 1861.
Patented, July 9th, 1861.
Recorded, vol. 131, page 295.
Cie., June 2d, 1861.
H.
Exd. A. R.
A. B. Stoughton.

Defendants' Exhibit, Johnson, 1865, Patent.

HOFFHEINS ET AL.
vs.
RUSSELL ET AL.

No. 46300.

The United States of America to all to whom these letters patent shall come:

Whereas Samuel Johnston, of Buffalo, New York, has alleged that he has invented a new and useful improvement in combined rakes and reels for harvesters (he having assigned his right, title, and interest in said improvement to himself and Rufus L. Howard, of the same place), which he states has not been known or used before his application; has made oath that he is a citizen of the United States, that he does
845 verily believe that he is the original and first inventor or discoverer of the said improvement, and that the same hath not, to the best of his knowledge and belief, been previously known or used; has paid into the Treasury of the United States the sum of thirty-five dollars, and presented a petition to the Commissioner of Patents, signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose:

These are, therefore, to grant, according to law, to the said Johnston and Howard, their heirs, administrators, or assigns, for the term of seventeen years from the seventh day of February, one thousand eight

hundred and sixty-five, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said Samuel Johnston, in the schedule hereunto annexed, and is made part of these presents.

In testimony whereof I have caused these letters to be made patent, and the seal of the Patent Office has been hereunto affixed.

Given under my hand, at the city of Washington, this seventh day of February, in the year of our Lord one thousand eight hundred and sixty-five, and of the Independence of the United States of America the eighty-ninth.

J. P. USHER,
Secretary of the Interior.

Countersigned and sealed with the seal of the Patent Office.
[SEAL.] D. P. HOLLOWAY,
Commissioner of Patents.

846 The schedule referred to in these letter' patent and making part of the same.

To all whom these presents shall come:

Be it known that I, Samuel Johnson, of the city of Buffalo, in the county of Erie and State of New York, have invented a new and improved combined reel and self-rake for harvesters, and the following is a correct description thereof, reference being had to the drawings and the letters of reference marked thereon.

To enable others to make and use my invention, I will proceed to describe its construction and operation.

The nature of my invention consists, not merely in an improved construction, which is very simple and renders it cheap to manufacture, but principally in remedying defects and supplying wants, which in this class of machines have prevented their coming into general practical use. It consists:

1st. In constructing a self-rake and reel combined for harvesters in such a manner that the operator can at pleasure, without stopping either the machine or the operation of the reel, drop either one or all of the rakes down to the platform to remove a sheaf, whenever sufficient grain has been deposited by means of the arrangement of the two tracks or ways, the spring-gate and the lever and cord attached thereto, which are hereinafter described.

2d. In an arrangement of the working parts, so that each rake or rake-head when operating simply as a reel, shall drop down nearly to the cutters, and remove the grain back from them sufficiently to prevent their being clogged before a sufficient quantity of cut grain has been deposited upon the platform for a sheaf, then rise up and pass over the grain thus deposited; and

3d. In the device for bringing the cut grain upon the platform at the outer end of the rake, which, in the rakes in use, has not been reached, as the rake revolving on a vertical shaft placed upon the inside of the platform must be made short enough to pass around on the plat-
847 form, and thus would not reach all the grain that the divider gathered in. I remedy this defect by a hinged extension of the rake-head, which will reach all the grain to be cut, and deposit it upon the platform, and still allow the rake-head to drop down to rake the grain off, and the hinged extension will rise and slide over the end board of the platform.

My combined reel and self-rake can be attached to most of the harvesters in use by any skil'ful mechanic in such a manner that the movement of the machine shall operate the rake; it may be operated by means of gearing attached to the machine and to the shaft *c* of my rake; but as I do not claim anything new in the mode of attachment, and as it may be attached in different ways to different machines, depending somewhat upon their construction, I have not shown any particular way. I make a platform to receive the cut grain, which is lettered *m* in the ordinary form, suitable for the operation of an automatic rake.

On the inner front end of the platform I attach a perpendicular standard (it may be of wood or iron) marked letter *l*, about three feet high, and the same is held to the platform by a casting in an elbow form, letter *o*, with a bearing, letter P, for the lower end of the shaft *c*. Upon the top of the standard is attached the way or track upon which the rake revolves, letter *r*. This is a casting circular in its form, and upon the inner end, or side of it nearest to the platform, is arranged two tracks, on which the elbow of the rake moves; the outer track so arranged as to elevate the rake, and the outer ring part still rising so as to carry the rake over the head of the driver, seated on the seat *s*. The inner track has two gates, the forward gate arranged with a spring to close the same after the roller on the end of the elbow of the rake has passed through; this spring is lettered *t*, and has a lever with a cord under the control of the driver, so that the driver can open the gate whenever sufficient grain is deposited on the platform for a bundle, to allow the elbow of the rake to pass through when the rake falls upon the platform and sweeps the cut grain off, and
848 the same is deposited at the side, out of the way for cutting the next swath, and this operation of raking can be repeated as often as desired; and whenever there is not sufficient cut grain upon the platform to form a bundle this gate is not opened, and the elbow of the rake passes over the outer track, and this elevates it sufficiently to pass over the grain lying on the platform, and the rear gate now closed, or being closed, by the elbow of the rake, forms part of this outer track; but when the elbow passes through the front spring-gate it passes out through the rear gate, which will be closed whenever the rake passes over the outer track.

The roller upon the ends of the elbow of the rake is lettered *e*, and the front gate is shown in Fig. 2 by letter *h*, and the rear gate by letter *i*, both closed, and in Fig. 3 by the same letters, and both open. The lever and cord by which the spring-gate *h* is opened is shown by letter *u*, in Fig. 2. The rear gate may be arranged with a spring, for the purpose of closing the same whenever desired, and the grain is suitable. The cord attached to the lever to open the front gate may be fastened to the driver's seat or any convenient place, and the gate kept open so as to reel and rake at every revolution; and the heads of the rake may be taken off from two or more of the arms, so that they shall not operate as rakes, or the teeth may be removed from two or more rakes, so that the same shall operate as a reel but not as a rake.

This circular track or way has a hub or bearing in the centre, in which the shaft *c* revolves, and a casting, *v v v*, is attached to the top of the same, in which are four openings or slots, in which the elbow of the arm *b* is fastened. This elbow is lettered *f*, in Fig. 1, and is fastened by a pin in the slot to allow of the rake rising and falling; and the rake sweeps forward into the grain and brings it to the cutters and

upon the platform, and serves the double purpose of a reel and rake. In case it is not necessary to use all of the four rakes, the heads of the rakes not used will still serve the purpose of a reel. In cutting grain there is often some difficulty of sweeping in the grain and raking it off upon the outer side of the platform, and I remedy this difficulty by attaching to the outer end of the rake-head a hinged arm, extending beyond the side of the platform a few inches, hinged so that the same will rise, but having a stop so that it shall not fall below the line of the rake-head. This is attached to the back side of the rake-head, and its weight will always bring it down to the stop when not held by the sides of the platform or by the grain. I attach a seat for the driver of the machine on the left side, and so arranged that the rake will pass over the driver. On the bottom of the rollers attached to the elbow of the rake-arm I attach a pointed flat-iron shaped plate or washer (Fig. 5), which is important to prevent the roller from striking against the forward gate in entering, in case the gate should not be opened sufficiently wide to allow of its entrance; but this wedge-shaped point prevents all difficulty in this respect. In a harvesting-machine, combining a reel and automatic rake, in which is embraced the important feature of being able to suspend the operation of either of the rakes at pleasure, it is indispensable that the operator of the machine should be located thereon, and I have so arranged a seat for this purpose that the rake shall in its revolutions sweep above him, and not incommode him.

Having thus described my invention, what I claim and desire to secure by letters patent are the following:

1st. I claim making an automatic rake and reel combined, so that the operator can, by means of a lever and cord, and the arrangement of two tracks or ways in which the elbow of the rake moves, cause either rake-head to operate at pleasure as a rake, and at the same time act continuously as a reel, all constructed in the manner herein described, and substantially as and for the purposes set forth.

2d. I claim in an automatic rake and reel combined, for harvesting-machines, the arrangement whereby the operator without stopping the action of reeling can drop either of the rake-heads down to the platform, and hold it thereon while removing the grain therefrom, constructed substantially as described, and for the purposes set forth.

3d. I claim the arrangement of the tracks or ways, when they are arranged so that in reeling the rake or rake-head will drop down nearly to the cutters, and move the cut grain back from them, and then rise up and over pass the cut grain, substantially as described and as and for the purposes set forth.

4th. I claim the arrangement of the driver's seat in connection with the lever, cord, and gate, substantially as described, and for the purposes set forth.

5th. I claim in a combined automatic rake and reel, changing the path of the roller which controls the motions of the rake when it is removing the grain from the platform, substantially as described, and for the purposes herein set forth.

6th. I claim the arrangement of the two tracks or ways in combination with the gates or switches, for the purposes herein set forth.

7th. I claim the lever and spring attached to the forward gate, in connection with the cord for operating the same, for the purposes set forth.

8th. I claim the use of the pointed washer, attached to the elbow of the rake, below the roller, for the purposes set forth.

9th. I claim the hinged extension attached to the outer end of the rake-head, applied substantially as described, and for the purposes set forth; and

10th. I claim the combination of the elbow of the rake-head with the roller and the outer and inner tracks or ways, constructed substantially as described, and for the purposes set forth.

SAMUEL JOHNSTON.

Witnesses:
GIB. F. HOWARD.
GEO. H. HUGHSON,

J. R. W. Ex'd C. C. W. E. H. R.

851 *Defendant's Exhibit, Young's Patent of* 1858.—SAMUEL E. CAVIN, *notary public and special examiner.*

HOFFHEINS
vs.
RUSSELL.

No. 21587.

The United States of America to all to whom these letters patent shall come:

Whereas McClintock Young, jr., of Frederick, Md., has alleged that he has invented a new and useful improvement in harvesters, which he states has not been known or used before his application; has made oath that he is a citizen of the United States; that he does verily believe that he is the original and first inventor or discoverer of the said improvement, and that the same hath not, to the best of his knowledge and belief, been previously known or used; has paid into the Treasury of the United States the sum of thirty dollars, and presented a petition to the Commissioner of Patents signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose:

These are, therefore, to grant, according to law, to the said McClintock Young, jr., his heirs, administrators, or assigns, for the term of fourteen years from the twenty-first day of September, one thousand eight hundred and fifty-eight, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said McClintock Young, jr., in the schedule hereunto annexed, and is made part of these presents.

852 In testimony whereof I have caused these letters to be made patent, and the seal of the Patent Office has been hereunto affixed.

Given under my hand, at the city of Washington, this twenty-first day of September, in the year of our Lord one thousand eight hundred and fifty-eight, and of the Independence of the United States of America the eighty-third.

[SEAL.]

JACOB THOMPSON,
Secretary of the Interior.

Countersigned and sealed with the seal of the Patent Office.

J. HOLT,
Commissioner of Patents.

The schedule referred to in these letters patent, and making part of the same:

To all whom it may concern:

Be it known that I, McClintock Young, jr., of Frederick City, in the State of Maryland, have invented a new and improved rake for harvesters, and I do hereby declare that the following is a correct description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a rear elevation of the platform of a harvester having my improved rake applied.

Figure 2 is an end elevation of the same on a smaller scale.

Figure 3 is a plan of the platform, and

Figure 4 is a separate view of the pitman.

The same part is marked wherever it occurs by the same letter.

The nature of my invention consists in the new arrangements
853 for operating the rake of harvesting machines, hereinafter more particularly described, whereby the cut grain is delivered in gavels at the side of the machine, in the path which has been passed over by the team, while the rake is, during every part of its operation, confined within the limits of the platform, and does not interfere with any of the operative parts, or prevent the driver from being seated on the machine.

In the drawings, A marks the platform of the machine; B, stanchion supporting the reel-shaft; C, rim or guard around outer edge of platform; D, shaft of reel; E, arm of reel; F, gatherers of reel; G, winch on end of reel shaft; H, rake bar; I, rake teeth; J, bent handle of rake; K, universal joint; L, arm attached to shaft D, by adjusting screw *a*; M, pitman, united to arm I and handle J by ball and socket joint; N and O, ball and socket joints; P, stop; R, guide for rake; S, arc on platform.

The shape of the platform is shown in figure 3. The rake is of the usual form. The bar H, in which its teeth, I, are set, is prolonged so as to form a handle, J, bent in the manner shown. This handle is attached to the reel-shaft D by the universal joint K. On shaft D is an arm, L, which is adjusted to the required position by the set-screw *a*. The lower end of this arm has a socket for the reception of a ball on the end of pitman, M. The pitman M is attached in a similar way to the rake handle J at the point O. On the handle J is a stop, P, which keeps the rake from falling below the horizontal position at the highest point in its revolution. The reel is formed in the usual way, with arms, E, and gatherers, F, but the heighth of the reel-shaft being fixed and unchangeable, I make the gatherers adjustable on the arms to suit the height of the grain to be cut. This is done by attaching the gatherers to the arms by staples, fitting the arms loosely, so that the gatherers may be placed at any required distance from the reel-shaft. They may be fixed at the desired point by set-screws passing through
the staples, or by wedges inserted between the staples and
854 the arms. While on the platform the rake moves between the rim or guard C and the arc S. When it leaves the platform it is guided in its revolution by the guard or guide R.

The operation is as follows:

As the machine is drawn along its path, the reel-shaft D is caused to revolve by any suitable gearing from the driving-wheel, applied at the point where the winch G is shown in the drawing.

The operation may be supposed to commence when the rake is at

the rear of the platform, as shown in Fig. 1. The revolution of the shaft D causes the rake to rise along the guide R; when it has attained its highest point it falls to a horizontal position, being prevented from falling further by the stop, P, which rests on the top of shaft D. It is then in a position parallel to the gatherers, and so continues till it reaches the front of the platform, when it passes in a radical sweep across it, delivering the cut grain in a next gavel at the side of the platform in the rear of the path of the team.

Having thus described my invention, what I claim, and desire to secure by letters patent, is the combination of the handle J, shaft D, arm L, pitman M, and guide R, or their equivalents, when arranged and operated substantially in the manner and for the purpose specified.

I also claim making the gatherers F adjustable on the arms E of the reel, as and for the purpose specified.

In testimony whereof I have hereunto set my hand this second day of September, A. D. 1858.

McCLINTOCK YOUNG, JR.

Witnesses:
JNO. G. THOMPSON.
CHAS. F. STANSBURY.

Exd., H. M. H., C. K.

(Indorsement on cover:) No. 142. Reuben Hoffheins, appellant, vs. C. Russell & Co., Clement Russell, William K. Miller, James S. Tonner, N. Ohio C. C. U. S.. Filed 10th November, 1879.

17-132

Supreme Court U. S.

NO. 142.

HOFFHEINS VS. RUSSELL AND OTHERS.

CROSS-EXAMINATION OF SOME OF COMPLAINANTS WITNESSES.

BALTIMORE, MARYLAND, November 11, 1878.

Met pursuant to agreement.

Present—John H. B. Latrobe, Esq., of counsel for complainants; John R. Bennett, Esq., of counsel for defendants.

JOHN FLORY, recalled and cross-examined.

By Mr. Bennett.

Int. 1. Did you ever purchase a combined self-raking machine from Mr. Hoffheins?

Ans. Yes, sir.

Int. 2. When was it?

Ans. I do not know just rightly when I purchased it.

Int. 3. Give me the date as near as you can?

Ans. I first saw them in 1861; I just went to look at them, but did not purchase right away.

[Objected to as not being responsive to the question.]

Int. 4. When did you first purchase one?

Ans. The first I purchased from him was in 1860.

Int. 5. Did you purchase a combined self-raking machine in 1860?

Ans. No; it was not a self-raker.

Int. 6. When did you own a self-raker?

Ans. I do not know just rightly when I got it, but in 1861 I was there looking at them; that was the first I saw them.

Int. 7. How long after you purchased your hand-rake machine did you get a self-raker?

Ans. A couple of years.

Int. 8. Was that the first year that Mr. Hoffheins built those machines that you got yours?

Ans. I do not rightly recollect whether it was the first year or not; I know in 1861 I saw them first; I looked at them in March, and then after that I traded for a machine; I traded my hand-rake for a self-raker.

Int. 9. Was it that same summer?

Ans. It is likely it was; I do not know that any more.

Int. 10. But you think it was?

Ans. It is likely it was.

Int. 11. Do you remember giving Mr. Hoffheins a certificate as to how that machine worked, and as to whether it worked well or bad, so that he would publish it?

Ans. I do not know as I did; I do not recollect that any more.

Int. 12. Did you pay Mr. Hoffheins cash for the machine when you purchased it?

Ans. Yes, sir; when I bought it from him.

Int. 13. Have you any receipt showing when you purchased the machine?

Ans. No, sir; I did not get no receipt from him.

Int. 14. Have you any data in your books that wonld show the date?

Ans. I do not know as I have, by paying him.

Int. 15. Then you trust entirely to memory as to when you purchased this machine?

Ans. Oh, I do not just trust to memory. I can show some that is correct that I saw the machine in 1861.

Int. 16. I did not ask you when you saw the machine, but when you purchased it.

Ans. It was the time when I wanted to trade with him.

Int. 17. Have you anything in connection with the machine itself or the purchase of it that fixes the date for you?

Ans. I haven't just particular the dates when I purchased the machine.

Int. 18. Have you anything to show when you purchased the hand-rake?

Ans. Yes, sir; I guess I can show that.

Int. 19. I mean have you anything in connection with the purchase of the machine.

Ans. You say for the first machine—the hand machine?

Int. 20. Yes.

Ans. Well, the first machine which I bought, I bought from the agent that he had out, and I bought the machine there on my farm.

That was in 1860; then in 1861 I took the machine back to the shop again and got some fixing done, and then I traded for the self-raker.

Int. 21. Is that the only way in which you can fix the date?

Ans. Well, this agent was there, and I had a miller there, at that time, and he was a brother of the agent, and this miller's borther was there with him most of the time, or a good deal of the time, and then in the fall my miller got sick, and then his brother was there, and my miller died, and that date I put down, and after that the agent was not there any more. That I can show.

Int. 22. Did you put down the purchase of the machine?

Ans. No, I didn't put down the purchase of the machine, but I put down when his brother died, and then after the agent left he didn't come there any more. On that account I know it.

Int. 23. Have you anything in your books that would show when you purchased this machine, or when you paid the money for it?

Ans. No, I haven't that on my book. All that I can show is when the agent left there that year.

Int. 24. How can you show that?

Ans. I put down when his brother died, and after that the agent didn't come there any more.

Int. 25. Is that the only way in which you can fix the date?

Ans. That is all that I have the dates for.

Int. 26. Does it appear in your books that his brother never came there after the death of your miller?

Ans. No; I haven't that in my books; as soon as his brother was dead they moved away.

Int. 27. You merely have in your books the time when your miller stopped work for you?

Ans. Yes, sir; that I have in my book.

Int. 28. And from that you endeavor to calculate, or fix the time when you purchased the machine?

Ans. Yes, sir; I know it was in 1860, and in 1861, I went to trade the machine.

Int. 29. And it was in 1861 that you got the self-raker?

Ans. It was in 1861 that I first commenced with the self-raker,

and that I went first to see them and look at them, and after that I traded.

Int. 30. About what time of the year was this, that you got the self-raker?

Ans. It was just before harvest commenced. I know we cut our grass with the old machine, because they hadn't so many of the others done, and in March I first saw the machine—in March, 1861.

Int. 31. How do you know that it was in March?

Ans. It was in the spring after the miller died.

Int. 32. How do you know that it was in March?

Ans. Why, I know—I know I was up in March. Before plowing commenced, and before work commenced, I was up there, and I took my old machine up and looked at the other.

Int. 33. My question is, what enables you to say that it was in the month of March that you first saw this machine?

Ans. I know it was the year after. I used the old one one season, and the spring after I went for the other, and I bought the hand machine in 1860, and in the spring afterwards, in March, I went up to see the machine.

Int. 34. How do you know it was in March?

Ans. Well, I know it was in the month of March that I was up there, before I commenced work outside.

Int. 35. In the same way you know that it was in the year 1861?

Ans. I know it was in the spring after my miller died. I only used it one year, and the spring after my miller died. I know it was in that year.

Int. 36. What time in the year 1860 was it that you purchased the hand-rakee?

Ans. Well it was before hay-making, and then I tried it to see whether it cut grass and grain, and I used it one season.

Int. 37. How did the self-raker which you purchased from Mr. Hoffheins operate in the field?

Ans. It worked well.

Int. 38. Did you work the whole harvest with it?

Ans. Yes, sir.

Int. 39. How long did you continue?

Ans. Working with it?

Int. 40. How long did you continue to use that machine?

Ans. Oh; well, I don't just rightly know how long; it may be five or six years.

Int. 41. Who set the machine up for you; I mean the self-raker which you purchased in 1861, of Mr. Hoffheins?

Ans. I can't recollect any more who it was. It was one of the hands, but I can't recollect who it was any more.

Int. 42. Had that machine a seat on?

Ans. Yes, sir; it had a seat on.

Int. 43. Two seats?

Ans. It had only one seat.

Int. 44. Where was that seat?

Ans. Right in front of the wheel for the driver to sit on.

Int. 45. Did you ever see it anywhere else?

Ans. No, sir; we had none on the machine.

Int. 46. Do you mean in front of the outer wheel?

Ans. In front of the wheel—right in front of the wheel.

Int. 47. Was it an S-shaped spring?

Ans. Yes, sir; it was an S-shaped spring.

Int. 48. Did you ever sit upon that machine?

Ans. Yes, sir; I did.

Int. 49. During the operation of reaping?

Ans. Yes, sir.

Int. 50. Many times?

Ans. Well, a good many times. Yes, sir; more than one day anyhow.

Int. 51. Never met with any accident?

Ans. Never.

Int. 52. What was the distance between the beaters of the rake and your head?

Ans. Well, I don't just hardly know what the distance is; but there was room enough. I never was touched with the rake.

Int. 53. The rake never broke?

Ans. It never broke for us; no, sir.

Int. 54. The seat was always in front of the outside wheel, I understand you to say?

Ans. Yes, sir; the seat was on front of the wheel.

Int. 55. Did you ever use that machine as a mower?

Ans. Yes, sir; I did.

Int. 56. Did you ever set upon it?

Ans. Yes, sir.

Int. 57. Whereabouts, during the operation of mowing?

Ans. We had it pretty much the same way. In grass mowing we did not use the seat very much. Sometimes we had four horses in and sat on the horse then, and sometimes we had only two, and I sat on the seat.

Int. 58. Was the seat ever directly back of the axle on the main frame of the machine?

Ans. We could put it back, but we most use it in front.

Int. 59. There was a place so that it could be put there?

Ans. Yes, sir.

Int. 60. And was anything to be put there during the operation of mowing?

Ans. Yes, sir; we had both places that we could use for mowing grass.

Int. 61. After the first harvest that you operated the Hoffheins self-rake, did you see Mr. Hoffheins and report to him how the machine had operated?

Ans. Well, I can't just recollect when I saw him; but whenever I saw him he asked me how it worked and I let him know; but I don't know just rightly what time it was. Whether it was after the first harvest or what time it was I don't know. It always worked well; we hadn't no trouble with it.

Int. 62. Please describe the condition of the machine that you saw at Hoffheins' shop in 1861?

Ans. How the machine was built, or what do you mean?

Int. 63. Please describe exactly what you saw at that time.

Ans. In 1861?

Int. 64. Yes, sir.

Ans. Well, in 1861, in March, when I came up there, the machine

was standing there in the shop, and was not all put together, but the seat was on and one rake, and there was one man sat on. I do not know whether I sat on myself or whether Hoffheins sat on. We turned the rake to see how the rake goes over the driver. The machine was not put together, but the things were all there. Then the second time I saw it was in May, and then it was put together ready for use. That was in 1861.

Int. 65. How much did you pay for your self-raker?

Ans. I do not know rightly what I paid to boot, but I traded my hand machine.

Int. 66. It was an entirely a new machine?

Ans. It was entirely new machine that I got.

Int. 67. I understand you to say that you have nothing on your books to show when you purchased the hand-rake except what you have already stated?

Ans. No, sir; I have nothing on my books to show when I bought that.

Int. 68. Did you not generally make a note of the money you paid out?

Ans. No, sir.

Int. 69. Nor of moneys received?

Ans. No; not of that machine; sometimes I do, but I can not recollect whether I gave him a draft for it or not, but I gave him the money.

Int. 70. You were carrying on the milling business at the time?

Ans. Yes, sir.

Int. 71. And kept a set of books?

Ans. Yes, sir.

Int. 72. And yet you made no note of the moneys paid out or moneys received?

Ans. Not on what belonged to the farm,—just on what belonged to the mill.

Int. 73. You let the farm go without taking any account?

Ans. What I paid for the farm I did not put in the mill-book, because the mill did not belong to it.

Int. 74. Have you any separate books in connection with the farm which would show the date?

Ans. I have not got anything to show what I paid for the reaper —not as I remember.

Int. 75. What was the size of that S-shaped spring-seat of the Hoffheins self-raking machine.

Ans. Well, I do not just rightly know what was the size, but it was just the size of a common seat.

Int. 76. An ordinary S-shaped spring?

Ans. Yes, sir; the size of a common seat, where a man could sit.

Int. 77. And you found no difficulty in driving the machine during the operation of reaping while sitting on the seat?

Ans. No, I did not.

Int. 78. Did you use it on all kinds of grain?

Ans. We used it on all kinds of grain that we had.

Int. 79. You had plenty of room.

Ans. Yes, sir; plenty of room.

Int. 80. Did you ever place the seat back of the axle and sit there during the operation of reaping?

Ans. No, sir; I always had it in front of the wheel.

Int. 81. Why did you not put it back of the axle and sit there during the operation of reaping?

Ans. There was no place to put it there; it was not intended to be put there.

Int. 82. A man could not sit there during the operation of reaping?

Ans. No, I guess not.

Int. 83. But you sometimes put it there while mowing?

Ans. While mowing grass; while mowing grass we had it there.

Int. 84. Do you know of any other persons who purchased self-raking machines from Mr. Hoffheins the same year that you did?

Ans. No, I do not.

Int. 85. I understood you to say that you paid Mr. Hoffheins for this self-raking machine the same year you purchased it of him?

Ans. Yes, sir; the same year that I traded with him.

Int. 86. Up to the time of getting the self-raking machine from

Mr. Hoffheins you had been accustomed to use your combined hand-rake, had you not; that is, you used your hand-rake before you got the other machine?

Ans. Before I got the other machine, yes, sir.

By Mr. Latrobe.

Int. 87. How tall are you?

Ans. I am about five feet ten inches.

[Signature of witness waived by consent of counsel.]

ISRAEL HEILMAN recalled and cross-examined by Mr. Bennett.

Int. 1. I understand that you purchased a self-raking machine from Mr. Hoffheins, is that so?

Ans. Yes, sir; I bought one.

Int. 2. When was it you purchased this machine?

Ans. In 1861.

Int. 3. Are you positive it was in 1861?

Ans. I am sure it was in 1861; it was the first machine I bought; before that I had none.

Int. 4. How do you fix the date?

Ans. I have nothing surer than this; I had a hireling in the same summer, and that is the summer he was there.

Int. 5. Did you never have a hireling before or after that?

Ans. Yes, sir; but not the same one.

Int. 6. Who was that one to whom you refer?

Ans. William Ilgenfreitz.

Int. 7. He is the man you hired the year that you purchased this machine?

Ans. Yes, sir; the year that he was hired with me I bought this machine.

Int. 8. Is that the only way in which you can fix the time when you purchased this machine?

Ans. That is all I can fix it by, excepting Mr. Nayler worked the same day, and he has an account in his book.

Int. 9. And you distinctly remember of Mr. Nayler working for you the very day that you purchased that machine, and that day only?

Ans. I worked it before that day. I bought the machine before that day that Mr. Nayler worked for me; we tried it that day.

Int. 10. And you now distinctly remember that the very first day you tried that machine Mr. Nayler worked for you, and that day only?

Ans. He worked that day for me, and backwards and forwards, and he has a record in his book of that day.

Int. 11. Have you seen that book and the record contained in it?

Ans. Yes, sir.

Int. 12. What does it say?

Ans. He worked one day for me.

Int. 13. Does it say that he worked one day for you in connection with the machine?

Ans. That I do not know.

Int. 14. How then do you know that it was not on some other occasion other than that particular day?

Ans. Because he worked that day in harvest for me, and I do not recollect that he worked after that; maybe he worked.

Int. 15. Have you nothing more positive?

Ans. I do not know of anything else.

Int. 16. Did you not testify in your direct-examination that you could not fix the exact time when you purchased this machine from Mr. Hoffheins?

Ans. I have not; I had forgot it, because it is so long ago and I had not studied over it.

Int. 17. But you have studied over it since that time?

Ans. Yes, sir.

Int. 18. What reason had you to study over this since the time of giving your direct-examination?

Ans. To see whether I could make it sure.

Int. 19. Did anybody ask you to do so?

Ans. No, sir.

Int. 20. Can you name any other parties who purchased self-raking machines from Mr. Hoffheins the same year you got yours?

Ans. I can not tell, but he told me he had five or six out.

Int. 21. Can you give me the exact date when you received this machine at your farm?

Ans. I can not fix the day when I got the machine, but when I cut grain I can fix the day; my father fetched the machine.

Int. 22. Who set the machine up for you?

Ans. For grass or grain?

Int. 23. Who was it set it up first?

Ans. For mowing?

Int. 24. Who set it up for you?

Ans. I cannot recollect that rightly.

Int. 25. Had it the seat on at that time?

Ans. There was a seat on to cut grass.

Int. 26. Where was the seat located?

Ans. Between the two wheels.

Int. 27. How long did you use that machine as a mower before using it as a reaper?

Ans. I can't tell; we first cut our grass and then grain.

Int. 28. When did you commence cutting grass in that year?

Ans. I can't tell.

Int. 29. About when?

Ans. About the middle of June; but I can't tell for sure.

Int. 30. And you had had this machine before that time, or at that time?

Ans. At that time I got the machine to mow grass.

Int. 31. Did you get the self-raker at the same time?

Ans. No, sir.

Int. 32. How long after that did you get the self-raker?

Ans. As soon as I commenced cutting grain Mr. Hoffheins sent it in and fixed it up.

Int. 33. Was there a seat on the self-raker after it was arranged ready for reaping?

Ans. Yes, sir.

Int. 34. Was the seat located at the same place as when you used it for mowing?

Ans. No, sir.

Int. 35. Where was the seat placed?

Ans. It was in front; on the side.

Int. 36. Was it not at the extreme outer end of the front cross-piece?

Ans. It was on the front cross-piece, but there are two holes there yet, and I don't know whether it was bolted to the side or on top.

Int. 37. Who placed the seat for reaping in that position?

Ans. The persons who set it up.

Int. 38. Was that the same seat that you used on the machine when mowing?

Ans. Yes, sir; as far as I know.

Int. 39. Was it an S-spring seat?

Ans. Yes, sir.

Int. 40. And they set it, I understand, when they fixed it as a reaper?

Ans. Yes, sir; they set it over.

Int. 41. When the machine was used as a reaper, was the seat in the same position as when used as a mower?

Ans. No. In mowing I had it between the wheels.

Int. 42. When was it that you first tried this machine as a reaper?

Ans. As near as I can fix the date, it was on the 5th of July.

Int. 43. How do you fix the date?

Ans. I haven't any more Nayler's book where he put it down.

Int. 44. Then you trust entirely to Nayler's book for the date?

Ans. Yes, sir; because he worked for me that time.

Int. 45. And that is the same reason why you say you purchased this machine in 1861, is it not?

Ans. Oh, no.

Int. 46. Why do you say you purchased it in 1861?

Ans. I fix that date by the hiring of Ilgenfreitz; I put it down when I hired Ilgenfreitz, and when I gave him money, and that was the only year he was hired with me.

Int. 47. Have you any book or any memorandum, or receipt to show when you purchased this machine?

Ans. Not any more than the former statement.

Int. 48. Is there anything in connection with the book in which

you kept the account of Ilgenfreitz, which goes to show when you purchased this machine?

Ans. Not any more than I know I bought it the same year that Ilgenfreitz was hired with me.

Int. 49. How do you know that?

Ans. Not any more than the date of the year. After that I had not hired him, nor before.

Int. 50. Have you anything in your book to show when you paid for this machine?

Ans. No; I didn't put down any date; I did not get any receipt; I trust Hoffheins for that.

Int. 51. Does your book show exactly when you hired Ilgenfreitz?

Ans. I can't exactly tell whether it fixes the day, but I paid him money in April.

Int. 52. Does it say in April, 1861?

Ans. Yes, sir; it does say in April, 1861.

Int. 53. Have you that book with you?

Ans. No, sir; I haven't the book here.

Int. 54. And it is by reason of what you have already stated that you fix the date when you purchased this machine as being in 1861?

Ans. Yes, sir.

Int. 55. You had not this machine in April, when you paid Mr. Ilgenfreitz the money, did you?

Ans. No, sir; I didn't have the machine at that time.

Int. 56. How now do you connect the purchase of this machine with the time when Mr. Ilgenfreitz worked for you?

Ans. I know I purchased the machine that year, and before I had none.

Int. 57. Have you any data to show that the first year that you had a machine was in 1861?

Ans. I have no date except from the date Ilgenfreitz hired with me.

Int. 58. Do you remember whether Mr. Hoffheins made self-raking machines in 1862 and 1863?

Ans. Yes, sir; he improved mine in that time.

Int. 59. Have you anything to show that it was not in 1862 and 1863 that you first purchased your machine?

Ans. I go upon that—when I hired Ilgenfreitz. That was in 1861, and it was that year that I got the machine.

Int. 60. And when you fix the day on which you tired that machine from Nayler's book?

Ans. Yes, sir; that was in 1861.

Int. 61. Did you see Mr. Nayler make the entry in his book?

Ans. I didn't see him.

Int. 62. How do you know but what that entry has been made quite recently?

Ans. I can't recollect any more than except from Ilgenfreitz hiring with me, and that Nayler worked for me at the same time.

Int. 63. How do you know but what that entry has been made quite recently?

Ans. Not; any more than I seen this book, I don't know how many years back.

Int. 64. How many years has it been since you first saw the entry in Mr. Nayler's book, to which you refer?

Ans. That I can't tell.

Int. 65. How do you know that Mr. Nayler did the work for you at that time, other than by the entry in his book?

Ans. I don't know any more than that he was there when we tried the machine, and he has it in his book on the 5th of July, if I am right.

Int. 66. Do you mean to say that he has in his book the entry that the machine was tried on the 5th of July, or only that he worked for you on that day?

Ans. That I don't mind any more how he wrote it in, excepting he helped me to harvest that year.

Int. 67. Did he ever work for you after that time?

Ans. He worked after that, but I don't know whether it was in harvest or not. I know that he worked the day that they set up the machine for me, and that they tried it.

Int. 68. Have you any entry in your books showing that Mr. Nayler worked for you at that time?

Ans. Yes, sir; I can show that I paid him money that day. I can't say for that day. I didn't pay him every day regularly, but he worked for me some days, and some days for others.

Int. 69. And you can merely show by your books that you occasionally paid him certain sums of money for services rendered?

Ans. Yes, sir.

Int. 70. Did he work any for you during the years 1862 and 1863?

Ans. Yes, sir; he worked a few years for me.

Int. 71. And your books will show that you paid him certain sums of money during that time?

Ans. Yes, sir; I paid him money at different times, and I put it down.

Int. 72. Did he help you during the harvest of those years?

Ans. I can't just recollect; it may be likely that he has.

Int. 73. When did you first learn of this entry in Nayler's book and how did you come to do so?

Ans. I can't exactly tell when it was.

Int. 74. How did you come to do so?

Ans. He told me; he has got it in his book.

Int. 75. Did he tell you that he had it in his book when the machine was tried on your farm?

Ans. No; that I do not mind.

Int. 76. How did he come to inform you that he had that entry, and for what reason?

Ans. Well, I can not exactly tell now.

Int. 77. Did he tell that that entry referred to the day on which the machine was first tried on your farm?

Ans. He told me he put it down in his book the day we tried the machine; that he recollects that was the day. He says that day, we tried it on the fifth.

Int. 78. And this is what Mr. Nayler told you, and the way in which you learned of the entry in his book?

Ans. Yes, sir; we talked about it, and he says he recollects it because he has got it in his book, but when we talked about this, I do not recollect.

Int. 79. The seat on that machine, when used as a reaper, was located outside of the outer wheel of the main frame; was it not?

Ans. It is rather in front; to the side on the front cross-piece; on that piece, and the wheel was back of it.

Int. 80. There was a small piece fastened on to the outer end of the front cross-piece, and the seat was bolted upon that piece, was it not?

Ans. I can not certainly tell whether it was or whether it was not.

Int. 81. Was not the seat just outside or beyond the wheel?

Ans. That I can not tell.

Int. 82. Do you remember of testifying for Mr. Hoffheins in reference to his self-rake, on any other occasion than this?

Ans. Yes.

Int. 83. When was that?

Ans. If I am right, it was in 1864. I am not so sure, but I think it was in 1864.

Int. 84. At that time you testified in reference to the seat; did you not?

Ans. It may likely be that at that time I could have told better than now; that is now fourteen years, and it was only three years before when that happened, and I could have told a straighter story at that time than I can now.

Int. 85. On that occasion, you testified that the seat on the machine "stood a little bit over the wheel." Would you now say that such was the fact?

Ans. Yes, sir.

Int. 86. Please examine the model, "Defendants' Exhibit 63," and state whether or not the front cross-piece in your machine is not there correctly shown?

Ans. As near as I can tell, it is about the same.

Int. 87. And was not there a piece fastened on to the outer end of the front cross-beam, as shown by this model?

Ans. That I can not recollect.

Int. 88 Was not the seat in your machine outside, or beyond the

wheel running out from the front cross-piece? I mean extending out from the front cross-piece ?

Ans. That I can not recollect.

Int. 89. At the time you testified in the interference case, do you remember of identifying a model as correctly showing the Hoffheins self-raker, which you had?

Ans. I can not tell just now.

Int. 90. When the rakes and beaters passed over the main frame of the machine, when in operation, was the seat within or without the sweep of the rake and beaters ?

Ans. The rake passed over, and the seat was within the sweep of the rake.

Int. 91. How many horses were attached to the machine when you first tried it ?

Ans. Two.

Int. 92. What time of the day was it that you first tried the machine?

Ans. It was after supper.

Int. 93. For how long a time ?

Ans. The piece was about three acres, and we run around it two or three times, as near as I can tell.

Int. 94. Was it a patch of wheat ?

Ans. Yes; it was wheat.

Int. 95. Who had the machine in charge, or who drove the machine, while you were trying it that evening?

Ans. I am not certain, but I think Robert Nayler.

Int. 96. Did he occupy the seat during that first trial ?

Ans. Yes, sir; that evening he sat on it, if I recollect.

Int. 97. You distinctly remember occupying the seat during the operation of reaping ? I mean while the machine was actually reaping ?

Ans. Yes, sir; he sat on while the machine was used.

Int. 98. Do you mean while it was actually cutting grain ?

Ans. Yes, sir.

Int. 99. Did he occupy the seat during the entire time ?

Ans. That I can not recollect, but I know he sat on.

Int. 100. You know that he occupied the seat, but for how long you can not tell?

Ans. No, sir.

Int. 101. Did he not occupy the seat while the machine was standing still, and before, and not during the operation of reaping?

Ans. He sat on while the machine was cutting grain.

Int. 102. You distinctly remember that, but not for how long a time?

Ans. Yes, sir.

Int. 103. Did he sit upon the horse and drive any time during that evening?

Ans. Not that I mind.

Int. 104. Did you yourself occupy the seat during the operation of reaping on that first trial?

Ans. It runs in my mind that I was sitting on, but I do not fully recollect. It strikes me that there were different ones sitting on, but I can not tell who.

Int. 105. Did you have the seat back, where you had it during the operation of mowing, at any time that evening; and if so, did any person occupy the seat when in that position?

Ans. No; the seat is in front.

Int. 106. Did you ever have the seat back between the wheels during the operation of reaping?

Ans. Not that I know.

Int. 107. Why did you not put the seat back there, instead of on the front outer corner?

Ans. I do not know that I had reason to put it back, and the next day I put four horses in, and sat on the horse.

Int. 108. Then the only time that the seat was occupied during the operation of reaping, was for a short time that evening, when you first tried the machine?

Ans. It was a short time; I can not tell how long.

Int. 109. And that was the only time, was it not?

Ans. I can not tell. The next day I raked with it with four horses, and it may be there was somebody else sitting on the seat, but I can't tell.

Int. 110. Did anybody sit on the seat driving during the operation of reaping the next day when you drove four horses?

Ans. That I do not know. I drove myself and sat on the horse, and it may be likely that there was somebody else sitting on the seat, but I do not know.

Int. 111. Why was it that the seat was changed for reaping other than as you had it for mowing?

Ans. A person could not sit there, and that is the reason it was put forward for reaping.

Int. 112. And the only person that you have any positive recollection of occupying the seat during the operation of reaping is Mr. Nayler?

Ans. I can't tell for sure; there may have been some more.

Int. 113. How did that machine work?

Ans. It worked right well.

Int. 114. Did not the machine break?

Ans. It broke the next day.

Int. 115. Did you use it as a self-raker after that?

Ans. After that I used it as a hand machine, and Mr. Hoffheins fixed it as a self-raker again.

Int. 116. Did you not use it as a hand-raker during the balance of that harvest?

Ans. I do not recollect whether we used it as a hand-raker or not.

Int. 117. When was it that Mr. Hoffheins fixed your machine or remodeled it?

Ans. I can not exactly tell; he made it as soon as he could make it.

Int. 118. Did he remodel it so that you used it that same harvest?

Ans. I do not know rightly, but I think not. I can't recollect.

Int. 119. I understand that the machine broke the next day (after the short trial in the evening), that you used it as a hand-raker for the remainder of the harvest, and that after that that Mr. Hoffheins remodeled the machine?

Ans. Yes, sir; after that Mr. Hoffheins fixed it, but I can not fix the day. I can not tell whether Mr. Hoffheins fixed it and used the rakes that year any more or not, but it was fixed afterwards.

Int. 120. Then, when the machine broke, no one was sitting on the seat, was there?

Ans. I can not recollect that any one was sitting on it.

Int. 121. Please state what alterations, if any, Mr. Hoffheins made in your machine when he remodeled it after the harvest of 1861?

Ans. The rake-post was lowered and it was made shorter.

Int. 122. Had the machine when remodeled a seat on for the driver to sit on during the operation of reaping?

Ans. No, sir.

Int. 123. When you used the machine as a mower during the harvest of 1862, did you not have the seat back of the axle and between the wheels the same as you had when cutting grass in 1861?

Ans. I had it in the same place.

Int. 124. And you had the same seat, had you not?

Ans. Yes, sir; as near as I can tell.

Int. 125. When you came to use the machine for reaping in the harvest of 1862, why did you not transfer the seat to the outer front corner, the same as you had it when the machine was first used as a reaper?

Ans. Because it was too low; we could not sit there after it was changed.

Int. 126. Do you know how much lower the rake-post was made in the machine as remodeled?

Ans. I could not tell.

Int. 127. Did you continue to use that machine after the harvest of 1862?

Ans. I used it for some time. I can't say how long—five or six years.

Int. 128. And you never used the seat for reaping except on the one occasion which you have already mentioned?

Ans. That is all I know. After that I put four horses in.

Int. 129. How did the machine work during the harvest of 1862?

Ans. It worked well, but it broke.

Int. 130. What was it that broke in connection with the machine?

Ans. One of the castings the rake-arm is fastened to.

Int. 131. To what extent did you use that machine during the harvest of 1862 as a self-raker?

Ans. I can't tell how long we used it.

Int. 132. Did it break often?

Ans. It broke a couple of times; I don't know how often.

Int. 133. Did you have any trouble with the machine in 1863, and if so, in what respect?

Ans. That I can't tell. Mr. Hoffheins made it until it did stand it.

Int. 134. Do you remember giving Mr. Hoffheins a certificate as to the merits of his machine after you had tried the same?

Ans. I don't know. He asked me once, and I told him it worked well, but it broke.

Int. 135. Did you give Mr. Hoffheins a written certificate or recommendation for his machine, or did you ever dictate one to him or to any one for him, and if so when was it?

Ans. That I can't tell.

Int. 136. Do you think you did?

Ans. I can't recollect. He asked me for one and I told him I could give him one as to its working well, but when it was I could not tell.

Int. 137. Was it the same year that you purchased the machine from him?

Ans. I can't tell.

Re-direct Examination.

By Mr. Latrobe.

Int. 138. What is the habit with regard to the number of horses used in mowing and reaping in your part of the world?

Ans. We generally use four horses, but for mowing grass I used but two.

Int. 139. In reaping you use four horses?

Ans. In reaping I use four.

Int. 140. When you use four horses, do you ride one of the horses or do you drive from the reaper?

Ans. I drive on the horse.

[Signature of the witness waived by consent of counsel.]

Michael Link recalled and cross-examined.

By Mr. Bennett.

Int. 1. When did you move to Dover?

Ans. It was in 1859.

Int. 2. What time of the year?

Ans. It was in March; the last part of March, somewhere; I don't know just what date, but it was in March; it was toward the last of March.

Int. 3. What means have you of fixing the date?

Ans. By moving from York to Dover.

Int. 4. Is it a mere matter of memory with you when you moved to Dover?

Ans. Yes, sir. I have children the same age, and that is something I never forget—that date when I moved—because everything is natural to me about that.

Int. 5. Then it is merely a matter of memory with you; is it not?

Ans. Yes, sir.

Int. 6. It is the same as to when you worked for Mr. Hoffheins, is it not?

Ans. Yes, sir. Well, I have some time at home, but I haven't it with me, when I worked with him.

Int. 7. Do you remember working for him other than on the occasion to which you have already testified?

Ans. No, sir.

Int. 8. When was it you worked for Mr. Hoffheins?

Ans. It was in 1860.

Int. 9. And that, I understand you, was the first and only time?

Ans. No, sir; I worked afterwards for him.

Int. 10. How often?

Ans. I don't know how often I did work for him. I worked pretty often for him, but just a short time.

Int. 11. A short time each year, off and on?

Ans. Yes, sir,

Int. 12. What style of machine was Mr. Hoffheins building when you first went with him?

Ans. It was the Ball machine.

Int. 13. How long did he continue to build the Ball machine?

Ans. I don't know how long he built it.

Int. 14. The first you heard or knew of his self-raker was seeing some one drawing it on a board, I understand you?

Ans. Yes, sir.

Int. 15. Some mere pencil outlines, was it not?

Ans. Yes, sir.

Int. 16. When next did you see or learn anything in reference to his self-raker or his intention of building one?

Ans. I seen the finished machine standing in the shop. It was either toward the last of March or the beginning of April. I seen it all along, but it was not finished.

Int. 17. Then it was during the fall of the first summer that you worked for him that you saw this drawing on the board?

Ans. Yes, sir.

Int. 18. You saw no parts at that time, did you?

Ans. No, sir.

Int. 19. When do you remember of seeing the first part of the rake, or any portion of it?

Ans. I don't know just what time it was, but it was sometime after that.

Int. 20. Sometime during the next spring?

Ans. Yes, sir.

Int. 21. And you fix the time when you saw the drawing and these parts as being the fall of 1860 and the spring of 1861?

Ans. Yes, sir.

Int. 22. And you fix these dates, I understand you, entirely from the time when you moved to Dover?

Ans. Yes, sir; when I moved to Dover.

Int. 23. And you have no other way of fixing the time?

Ans. No, sir.

Int. 24. Did you make any memorandum or note of the fact of having seen these drawings or parts of the machine?

Ans. No, sir.

Int. 25. After working for Mr. Hoffheins in 1860, did you work for him again until the harvest of 1861?

Ans. Yes, sir; I worked in the harvest of 1861 for him.

Int. 26. What occasion had you for going to Mr. Hoffheins' shop when you were not employed there?

Ans. I suppose it was just because it was near to my house, and I went through the shop, still seeing what work was put up there.

Int. 27. Did you work upon these machines for him?

Ans. Yes, sir.

Int. 28. And continued to do so, from time to time, whenever you worked there?

Ans. Yes, sir; whenever I worked there.

Int. 29. Can you give the exact date when you saw the first completed machine?

Ans. No, sir; not the exact date.

Int. 30. Then all the dates which you have given are calculated upon the basis of the time when you moved to Dover?

Ans. Yes, sir.

Int. 31. How long did Mr. Hoffheins continue to build self-raking machines?

Ans. I don't know that.

Int. 32. Have you any memorandum books or data going to show when you moved to Dover?

Ans. I have none with me, but I may have some at home.

Int. 33. Do you know whether you have anything by which you can fix the date beyond any doubt?

Ans. There is no doubt about this time when I moved there. I can have proof enough of that, because I bought the property, and I have a deed which just shows it exactly.

Int. 34. You worked for Mr. Hoffheins in the summer of 1860 for the first time, as I understand you?

Ans. Yes, sir; that was the first.

Int. 35. And then, after that, during each summer, off and on?

Ans. Off and on; yes, sir.

Int. 36. And it was during this time that he built these machines?

Ans. Yes, sir.

Int. 37. Are you willing to swear positively that it was not in the spring of 1862 that Mr. Hoffheins built these self-raking machines?

Ans. Yes, sir.

Int. 38. How do you fix that in your mind?

Ans. That I am positive about it?

Int. 39. Yes.

Ans. Well, I have told you.

Int. 40. Do you know when Mr. Hoffheins put the first machine together as a whole machine?

Ans. He put it together through the winter of 1861—in 1861.

Int. 41. Did you see him put the machine together?

Ans. I didn't see him put it together. I saw it after it was put together. I was not around there when the machine was put together.

Int. 42. You have spoken of a trial that took place in the rye. How long before that trial was it that you saw the first completed machine?

Ans. It was either the last part of March or the beginning of April, I will not be positive when it was exactly, but it was somewhere around there.

Int. 43. When was it that this trial took place?

Ans. As near as I can say, it was somewhere in June. The rye was not ripe yet.

Int. 44. How near ripe was it?

Ans. It was a couple of weeks before harvest—two or three weeks before it got ripe. I can't tell exactly how long it was, but it was somewhere around there.

Int. 45. How do you fix the year?

Ans. Why, I fix the year by the time I was working for him, because it was the third year that I had moved there.

Int. 46. And it was the same year that he built the machines, was it not?

Ans. That is the year that he put them machines out; he had started them machines before.

Int. 47. Did you see that trial, and were you present during the whole of it?

Ans. In the green rye?

Int. 48. Yes.

Ans. Yes, sir; I was there.

Int. 49. Did the machine break?

Ans. No, sir.

Int. 50. How long did they run the machine?

Ans. Not very long; they just run it a short distance so that they were satisfied that it would work, because they didn't want the green rye cut any more than was necessary.

Int. 51. What time of day was it?

Ans. It was in the morning.

Int. 52. And you are positive that the machine did not break?

Ans. Yes, sir.

Int. 53. Were you working for Mr. Hoffheins at that time?

Ans. I was working for him a couple of days after that; I was not working for him before that.

Int. 54. After the trial in the rye, of which you have spoken, did you see any other of Mr. Hoffheins' machines tried?

Ans. Yes, sir.

Int. 55. When was it, and where?

Ans. It was in the beginning of July, 1861; the date I can't just state exactly, but it was on Israel Heilman's farm.

Int. 56. Was it the same year that the machine was tried?

Ans. Yes, sir.

Int. 57. And that you first saw the completed one?

Ans. Yes, sir.

Int. 58. Do you trust entirely to memory as to seeing the machine at Heilman's, and the time when it was there?

Ans. Yes, sir; I do.

Int. 59. You have no memorandum going to show the date?

Ans. No, sir.

Int. 60. And yet, after the lapse of so many years, you distinctly remember the fact and the exact time?

Ans. Well, I can't just tell the day.

Int. 61. Did you and Mr. Hoffheins take that machine out to Heilman's?

Ans. No; we did not take the machine out, but we set a second machine up in the grain field and started it.

Int. 62. Can you give me the exact date?

Ans. Not any nearer than I have stated; it was in the beginning of July.

Int. 63. What time in the day was it?

Ans. It was toward evening, after supper. It was about five o'clock or so.

Int. 64. Who was present when you set that machine up?

Ans. Well, Mr. Nayler was there and Mr. Heilman.

Int. 65. Did they immediately start the machine to cutting?

Ans. Yes, sir; directly after it was finished, they put their horses in, and started the horses.

Int. 66. How much did they cut?

Ans. They went twice around the field while I was there.

Int. 67. Did you see the machine after that?

Ans. No; I did not see the machine working after that.

Int. 68. You know nothing about it after that?

Ans. No, sir.

Int. 69. How many horses were attached to the machine?

Ans. There were two horses attached to it that evening.

Int. 70. Who drove the machine?

Ans. Nayler.

Int. 71. Where did he sit?

Ans. On the seat.

Int. 72. On the machine?

Ans. On the machine; yes, sir.

Int. 73. Please state where that seat was located?

Ans. It was located in the front part of the machine, before the

wheel, on the cross-bar that comes across the machine right out at the end.

Int. 74. Was it not at the extreme outer end of the front cross-piece?

Ans. Yes, sir.

Int. 75. And resting on a small projection?

Ans. I do not know whether there was any projection there, and I am not positive whether there was any projection there or not.

Int. 76. The seat was as far out as it could be put?

Ans. Yes, sir; it was as far out as it could be put.

Int. 77. Was it not an "S" spring-seat?

Ans. Yes, sir.

Int. 78. Of the ordinary size?

Ans. Yes, sir.

Int. 79. About what was the height of it?

Ans. I do not know that.

Int. 80. It was an ordinary S shaped spring-seat such as were used in connection with the Ball machines?

Ans. Yes, sir.

Int. 81. How long did Mr. Nayler occupy the seat during that trial?

Ans. He was on the seat all the time as long as I was there.

Int. 82. You distinctly remember that?

Ans. Yes, sir; he was on all the time that I was there, but how long after that I can not tell; but he was on all the time I was there.

Int. 83. Did they have the seat in any other location other than that which you have stated?

Ans. Yes, sir; to mow grass they had the seat between the two wheels; but to cut grain they had not.

Int. 84. Why did they not put it there to cut grain?

Ans. They could not.

Int. 85. Why not?

Ans. On account of the rake; they could not sit there.

Int. 86. The rake hit the driver, do you mean?

Ans. Yes, sir; if the seat were to be put on that place. The rake

did not interfere with the driver if the seat was at its proper place to cut grain. It was another place where they put it when they mowed grass.

Int. 87. Did not Mr. Hoffheins ever put it back between the two wheels for reaping?

Ans. No, sir.

Int. 88. Did he not intend to put it there?

Ans. No, sir; never—not for reaping.

Int. 89. Did you ever sit upon one of those machines during the operation of reaping?

Ans. That I can not tell you; I might and might not; I do not know; I was sitting on a good many machines, but I can not say whether I was sitting on one of them or not.

Int. 90. Do you know how many self-raking machines Mr. Hoffheins made the first year?

Ans. No, sir.

Int. 91. You did not work there long enough to acquire a knowledge of that fact, did you?

Ans. No, sir; I did not work long enough.

Int. 92. You only worked now and then occasionally?

Ans. Yes, sir.

Int. 93. And that was the case each year?

Ans. Yes, sir.

Int. 94. After the first year that Mr. Hoffheins made the self-raker, what style of machines did he build?

Ans. After the first year that he put up the self-raker?

Int. 95. Yes, sir.

Ans. He had got another machine up of his own after that.

Int. 96. Was it a self-raker?

Ans. It was a self-raker also.

Int. 97. The same as the other one?

Ans. Yes, sir; it was the same rake; well, we had two different kinds; one had the same rake, and the other was a little different.

Int. 98. Did these machines have a seat on for reaping?

Ans. Yes, sir.

Int. 99. Did the self-raking machines that he constructed have a seat for the driver to occupy while reaping?

Ans. Yes, sir.

Int. 100. When did Mr. Hoffheins stop building self-raking machines, if you know?

Ans. I do not remember just when he stopped building them.

[Signature of witness waived by consent of counsel.]

Jacob F. Glatfelter, recalled and cross-examined.

By Mr. Bennett.

Int. 1. I understand that you purchased a self-raking machine from Mr. Hoffheins. Please state exactly when it was you purchased that machine?

Ans. I can not tell just the date. I can state the year.

Int. 2. Give me the year and date, as near as possible?

Ans. It was in the year 1861,—the latter part of May or the beginning of June.

Int. 3. Did you get the machine at your farm betwen the latter part of May and the beginning of June?

Ans. Yes, sir.

Int. 4. What enables you to fix the year?

Ans. By the time that that hand worked for me.

Int. 5. Is that the only way?

Ans. That is the only way.

Int. 6. Other than that it is entirely a matter of memory with you?

Ans. I have it booked.

Int. 7. You have what booked?

Ans. The time that hand worked for me I kept his time, and I take it by that.

Int. 8. Have you the time booked when you purchased that machine?

Ans. No, sir.

Int. 9. Have you anything in your book to show when you did purchase that machine?

Ans. No, sir.

Int. 10. Have you any entry of a payment of any money to Mr. Hoffheins in connection with that machine?

Ans. I have not.

Int. 11. Have you any receipt?

Ans. I have not.

Int. 12. Have you anything in your book in connection with the entry of John Shive's time which enables you to fix the time when you obtained this machine?

Ans. Well, I have another thing—the time I commenced farming.

Int. 13. When did you commence farming?

Ans. I commenced farming in 1859.

Int. 14. All your books show is the time that John Shive worked for you?

Ans. Yes, sir.

Int. 15. And it is a matter of memory entirely that John Shive worked for you at the time you purchased that machine?

Ans. Yes, sir.

Int. 16. Was John Shive working for you at the time you purchased this machine, or did he come to you afterward?

Ans. Well, I got the machine before hay-making commenced, and we worked through hay-making harvest.

Int. 17. What time does hay-making commence?

Ans. The 15th or 20th of June.

Int. 18. But you got the machine before that time?

Ans. Yes, sir.

Int. 19. You think it was between the 1st of May and the 1st of June, as you said a little while ago?

Ans. The latter part of May or the beginning of June.

Int. 20. Did you use it first as a mower?

Ans. Yes, sir.

Int. 21. When using it as a mower, did you sit upon the machine?

Ans. Yes, sir; sometimes.

Int. 22. Where was the seat?

Ans. Right between the two drivers.

Int. 23. Did you have the seat there when you used it as a reaper?

Ans. No, sir.

Int. 24. Why not?

Ans. I couldn't use it there.

Int. 25. Why not?

Ans. There was no room there for it.

Int. 26. Would the rake hit the driver if he had sat there?

Ans. Yes, sir.

Int. 27. Did you ever sit upon that machine while reaping?

Ans. That is hard to say whether I did or not; I couldn't say that I did; I think Mr. Hoffheins rode on it.

Int. 28. Are you positive of that fact?

Ans. I can not be positive.

Int. 29. It is a good while to remember back as to such things, is it not?

Ans. Well, it is a good while ago; that is so.

Int. 30. When you used that machine as a reaper, did you change the location of the seat?

Ans. Yes, sir.

Int. 31. Why did you change the location of the seat when you used it as a reaper, other than what it was as a mower?

Ans. Well, you couldn't use it as a reaper in the first place, where I used it as a mower, as it was in the road.

Int. 32. Would it be in the road even if you had not sat upon it?

Ans. I don't know how that would be; nobody would have sat upon it.

Int. 33. Do you remember ever seeing the seat in any other position than what it was as mower?

Ans. Yes, sir.

Int. 34. Where was the seat?

Ans. On the outside, on the wooden frame.

Int. 35. At the extreme outer end of the front cross-piece?

Ans. Yes, sir.

Int. 36. It was bolted on to a projection there?

Ans. Yes, sir.

Int. 37. Just outside the wheel?

Ans. Outside the wheel.

Int. 38. But you have no positive recollection or opinion of occupying the seat while the machine was reaping?

Ans. I couldn't possitively say, but I think Mr. Hoffheins occupied the seat when we started in.

Int. 39. Was it an S spring seat?

Ans. Yes, sir.

Int. 40. Of the ordinary size?

Ans. Yes, it was about the ordinary size; I guess.

Int. 41. Such as were used on seats in those days?

Ans. Yes, sir.

Int. 42. Did you pay Mr. Hoffheins for the machine the same year that you bought it?

Ans. I paid him part.

Int. 43. How much?

Ans. I think I paid him $120.

Int. 44. Do you know when it was that you made the payment?

Ans. I couldn't just exactly say: it was along in September, I suppose, as near as I can tell.

Int. 45. Have you any entry of it in your book?

Ans. No, sir.

Int. 46. Or any receipt?

Ans. No, sir.

Int. 47. Were you to have paid him more than that for it?

Ans. Yes, sir; for the combined machine.

Int. 48. Why was it that you did not pay him more?

Ans. Well, the machine didn't stand it.

Int. 49. Didn't stand what?

Ans. That is, the rake broke.

Int. 50. When?

Ans. That same season.

Int. 51. About how long had you used the machine?

Ans. I had used it only a short time as a self-raker.

Int. 52. How much do you suppose you cut with that machine as a self-raker?

Ans. Well, we didn't cut around through a ten-acre field.

Int. 53. Before the rakes broke?

Ans. Yes, sir.

Int. 54. I understand you that you sat upon the horse while driving the machine?

Ans. Yes, sir.

Int. 55. What did you do with the machine after that?

Ans. Well, we took the rake off, and took it off by hand.

Int. 56. Did you ever have that machine remodeled?

Ans. Yes, sir.

Int. 57. When?

Ans. In 1862.

Int. 58. It was the year after you purchased the machine?

Ans. Yes, sir.

Int. 59. What alterations were made?

Ans. Well, he altered the rake-post, and he altered the tumbling shaft.

Int. 60. Did the machine have a seat to be used when reaping after it was remodeled?

Ans. No, sir.

Int. 61. Why not?

Ans. That is more than I can say.

Int. 62. Could you not have taken the seat and placed it on the extreme outer corner, the same as you did when you first purchased the machine?

Ans. Yes, sir; I guess anybody could have put it there.

Int. 63. But you do not know why it was not put there, do you?

Ans. I don't positively know it.

Int. 64. Then you never used that machine with a seat while reaping?

Ans. I never used it with a seat—not for reaping. It is not our custom through that part of the country. We generally sit on the horses. You hardly ever see a farmer sit on the machine. We usually hitch up four horses to reap.

Int. 65. Did Mr. Hoffheins tell you, after the machine was remodeled, that you could not use the seat when reaping?

Ans. That is more than I can tell you.

Int. 66. You say the rake-post was changed?

Ans. Yes, sir.

Int. 67. How much shorter was it made?

Ans. I can't tell you that.

Int. 68. What is your opinion as to that?

Ans. Indeed, I couldn't exactly say. It may have been twelve inches. Ten or twelve inches; I couldn't exactly say.

Int. 69. Do you think it was as much as six inches?

Ans. I could not say, for my part.

Int. 70. You have no positive recollection as to that?

Ans. No, sir.

Int. 71. Having never occupied the seat on that machine, as it was when you purchased it, you can not say whether a man could have sat there during the operation of reaping, or not?

Ans. When I purchased it you could.

Int. 72. How do you know that fact, if you never tried it?

Ans. We had the seat on, in the first place, as I said before.

Int. 73. But you say that you have no positive recollection of anybody occupying that seat?

Ans. Didn't I say that Mr. Hoffheins occupied it? I did, if I am not mistaken.

Int. 74. How do you know that you are not mistaken?

Ans. I couldn't positively say; but to the best of my knowledge, Mr. Hoffheins occupied it.

Int. 75. Then it is a mere matter of judgment with you as to whether or not a man could have occupied that seat during the operation of reaping, is it not?

Ans. No, sir; you could occupy it in the first place.

Int. 76. That is your judgment, is it not?

Ans. No, sir; it is not just a judgment; you could easy occupy the seat in the first place when I bought the machine.

Int. 77. Having never occupied the seat yourself, or having no positive recollection of ever having seen anybody occupy the seat during the operation of reaping, how are you able to say, other than

as a matter of mere judgment, that a driver could have occupied that seat when the machine was in operation?

Ans. I could see that.

Int. 78. As the machine was standing on level ground?

Ans. Yes, sir.

Int. 79. Were there two seats on the machine when you first purchased it, or one?

Ans. There were two seats.

Int. 80. Were they both the same?

Ans. No; there was a little difference in them.

Int. 81. In what respect?

Ans. One was a wooden seat, and the other was a cast seat.

Int. 82. In other respects they were the same, were they?

Ans. Yes, sir.

Int. 83. What was the purpose of having two,—just merely to have a duplicate, in case one was broken?

Ans. Well, you could use both the seats in one place.

Int. 84. It was when the machine was to be used as a hand-raker that you needed the two seats?

Ans. Yes, sir.

Int. 85. You would not need the two seats when using the machine, either as a reaper with the self-raker or as a mower, would you?

Ans. No, sir.

Int. 86. Did you give Mr. Hoffheins a certificate or recommendation as to the merits of his machine?

Ans. To the best of my recollection, I did.

Int. 87. Was that the fall after you purchased the machine?

Ans. No, sir.

Int. 88. How long had you had your machine when you gave him that recommendation?

Ans. I had the machine, to the best of my recollection, two years.

Int. 89. Did you not give him a recommendation prior to that time?

Ans. Not to the best of my knowledge.

Int. 90. So far as the statements contained in that recommendation which you gave him are concerned it was the truth, was it not?

Ans. Yes, sir.

Int. 91. How did your machine work after it was remodeled?

Ans. It worked well.

Int. 92. Did it break again?

Ans. No, sir.

Int. 93. Then the machine as remodeled was a good machine?

Ans. Yes, sir.

Int. 94. And it was the recommendation of that machine which was referred to in the certificate, was it not?

Ans. Yes, sir.

Int. 95. And you gave that recommendation the fall after you tried that machine as remodeled, did you not?

Ans. It is likely I did. I could not positively say.

Int. 96. What became of that machine?

Ans. That machine is at home at my place.

Int. 97. Have you continued to use it up to the present time?

Ans. I did not use it last season. I used it the year before this last one?

Int. 98. During all that time you never used it as a reaper with the seat on, did you?

Ans. I did not.

Re-direct Examination.

By Mr. Latrobe.

Int. 99. You say you went to farming in 1859?

Ans. Yes, sir.

Int. 100. How did you cut your first crop?

Ans. By the cradle and scythe.

Int. 101. That was the crop of 1859?

Ans. Yes, sir.

Int. 102. How did you cut your crop of 1860?

Ans. I cut it with a cradle and scythe.

Int. 103. And then how did cut the crop of 1861?

Ans. I cut it with Hoffheins machine.

Int. 104. Have you any possible doubt in your mind of the time when you commenced farming? Are you sure that you commenced farming in 1859?

Ans. Well, I would not positively say it was 1859.

Int. 105. What is your belief on that subject?

Ans. To the best of my recollection, it was in 1859.

Int. 106. You say that when you first saw this machine at work, it made one or two circuits in a field; that is what you stated, is it not? You used the machine till it broke?

Ans. Yes, sir.

Int. 107. How did it work until the rake broke?

Ans. It worked well enough.

Int. 108. Was there a man on the machine at that time up to the time the rake broke?

Ans. To the best of my knowledge Mr. Hoffheins occupied the seat.

Int. 109. Did the machine stop owing to any other defect than the breakage of the rake?

Ans. No, sir,

Int. 110. I think you have already said that the practice in your part of the country is to work with four horses?

Ans. Yes, sir.

Re-cross-examination.

By Mr. Bennett.

Int. 111. I understand you to say that for the first two years after you commenced farming you cut your harvest with a cradle?

Ans. Yes, sir; to the best of my recollection, I did.

Int. 112. And you think it was the third harvest after you commenced farming that you used the Hoffheins self-rake?

Ans. Yes, sir.

Int. 113. Where was it that you commenced farming?

Ans. York county, Pennsylvania.

Int. 114. On whose farm?

Ans. Joshua Hyde's.

Int. 115. How long did you remain there?

Ans. I remain on the same farm now.

Int. 116. In what kind of grain was it that you first tried this machine?

Ans. Wheat.

[Signature of witness waived by consent of counsel.]

Robert Nayler, recalled and cross-examined.

By Mr. Bennett.

Int. 1. Have you the account book with you to which you referred on your direct examination?

Ans. Yes, sir.

Int. 2. Does that book show every place where you worked by the day or job?

Ans. I only worked for Heilman at that time.

[Objected to as not being responsive to the question.]

Int. 3. My question was, does that book show every place where you worked by the day or job?

Ans. I worked for my brother, Tempest Nayler.

Int. 4. Have you any other account book showing when and where you worked, other than the one you have produced here this morning?

Ans. No, sir.

Int. 5. Did you not keep an account of your time after the time which is set down in this book?

Ans. I did not work so much out.

Int. 6. Did you not work for Israel Heilman during the harvest of 1862?

Ans. I do not know for certain.

Int. 7. Can you not find out from your book whether you did or not?

Ans. Yes, sir; If I see the book.

Int. 8. Please look over your book and see whether you did not work for Israel Heilman during the harvest of 1862?

Ans. I can not tell whether it was in 1862 or not.

Int. 9. Do you not find an entry in your book, under the date of 1862, where it shows that during the month of July, 1862, you worked one day for Israel Heilman?

Ans. I do not know whether that belongs to the upper entry or not, or whether it is a separate entry. [Referring to the memorandum book.]

Int. 10. Would you not say from the way that it is entered in your book, that that is included in an entry for work that was done in the year 1862?

Ans. That I can't tell for sure.

Int. 11. Did you not usually put the year down when you made an entry in your book?

Ans. I used to, but because that is only one day, I don't know whether it belongs to the same entry or not.

Int. 12. Do you not find on both those pages to which I have referred, that the year 1862 is marked there?

Ans. Yes, sir; the top shows as though it was in 1862?

Int. 13. Do you not find on both of those pages the date 1862?

Ans. Yes, sir; there it shows like that.

[Indicating on book.]

Int. 14. Didn't you work for Israel Heilman during the harvest of 1858–9, and '60?

Ans. It shows in that book that in 1859 I worked for him.

Int. 15. Examine the book and say if it does not show that you worked for him during all those years?

Ans. In 1858 I worked for him, in 1859 I worked for him, and in 1860 I worked for him.

Int. 16. Does it not appear from that book that you worked for Mr. Heilman during the month of July, in the years 1859 and '60?

Ans. Yes; I think it does.

Int. 17. Then your book shows that you worked for Israel Heilman during the month of July, in the years '59, '60, '61, and '62; isn't that the case?

Ans. Yes, I worked for him, but I will not say that I worked for him in July, '62.

Int. 18. If that entry under the head of '62 does not refer and is not intended to refer to the year 1862, to what year does it refer?

Ans. That I can't tell. If I don't know a thing I will not tell it.

Int. 19. Can you find a single entry in this book which was made after the year '62?

Ans. Yes, sir; for John Bauersox, I worked in '64. There is an entry when my boy wooked in '74 on the road for Edward Smyser.

Int. 20. Can you find any other entry?

Ans. I can't find any more.

Int. 21. Do you not find several enetries in your book dated '62?

Ans. There are several enteries in the book, but they don't refer to work I have done—two of them refer to work.

[It is agreed between counsel that the book referred to by witness shall be produced at the hearing.]

Int. 22. Is there anything in that book which indicates the character of work which you performed, or anything other than the names of parties for whom you did work?

Ans. Yes; I marked in also where I hauled coal.

Int. 23. Is there anything contained on these pages, which I have marked from No. 1 to No. 24, inclusive, which indicates or shows anything other than the mere fact that you worked for the parties there named at that time?

Ans. At No. 1 it says I worked for Heilman. It doesn't say what I worked, but I know I worked in harvest.

Int. 24. Is there anything contained in those pages which indicates the character of the work you did?

Ans. At No. 4 I worked for Samuel Kump, on the road; that is mentioned. At No. 5 I also worked for Sam Kump on the road. At page 5, May 20th, Michael Smyser, to one load of sand, two dollars. There is one item on No. 8 where I planted corn for Israel Heilman two days. At No. 10 is an item of working on the road. No. 11 says also "worked on the road."

Int. 25. As the answer has consumed so much time, please confine yourself to pages 13 to 24, inclusive, and state whether or not you find anything stated on those pages which shows the character of the work performed by you?

Ans. I can not find anything that says what kind of work was done.

Int. 26. Does your book show that you worked for Israel Heilman on July 5th, 1859 and 1860?

Ans. Yes, sir.

Int. 27. Do you remember working for Mr. Heilman during the year '63?

Ans. I do not.

Int. 28. Did you never work for him after '62?

Ans. That I don't know.

Int. 29. Have you no time book that would show that?

Ans. That I don't know.

Int. 30. Can you tell what you did on July 5th, 1859 and '60? I mean the precise character of work you did, and where you were?

Ans. That is hard to tell.

Int. 31. Can you tell me what you did on July 5th, '61?

Ans. That I recollect very well yet.

Int. 32. Why can you not recollect all you did on July 5th, '59 and '60?

Ans. That time we did not get a new reaper.

Int. 33. That is not my question. My question is, if you distinctly remember what you did on July 5th, '61, why can you not tell me what you did on July 5th, 1859 and '60?

Ans. Because the machine was set up in grain. That I know as well as though it happened to-day.

Int. 34. You distinctly remember that, and yet you can not tell me what you did on the same day in the years 1859 and 1860?

Ans. That I can not tell, but something new happened, I can recollect very well, and it was on a Friday; that I recollect, too.

Int. 35. Can you tell me what you did in July, 1862?

Ans. I can not tell what I worked.

Int. 36. Please tell me from memory when you first commenced work for Mr. Heilman in the year 1861?

Ans. I do not know that I worked before the 5th of July, 1861.

Int. 37. And you fix the time when Mr. Heilman received that

machine as being the very first day that you worked for Mr. Heilman in the year 1861?

Ans. He had the machine before.

Int. 38. But you fix the time when the machine was set up on Mr. Heilman's farm, and first operated, as being the first day you worked for Mr. Heilman in the year 1861?

Ans. The 5th of July one of Mr. Hoffheins' hands fixed up the machine, and I drove it in the afternoon.

Int. 39. Was that the first day you worked for Mr. Heilman in the year 1861?

Ans. I am not sure whether I worked before or not.

Int. 40. How then do you fix the exact date when this machine was tried on Mr. Heilman's farm?

Ans. The 5th of July was the first day I worked in harvest for him. That I recollect—when he commenced.

Int. 41. You are able to state from memory, I understand you, the exact day you commenced work for Mr. Heilman in the harvest of 1861?

Ans. Yes, sir; that I recollect very well. That was the first day that year he commenced. If you go along with me, I can show you the place.

Int. 42. Please state the first day that Mr. Heilman commenced harvesting in the year 1860; also, 1859.

Ans. That I don't know, and that I can not tell.

Int. 43. Why can you not tell that as well as the exact day that he commenced harvesting in 1861?

Ans. You know if anything new comes, you can recollect it well.

Int. 44. State exactly how you fix the day when the machine was first set up and operated on Mr. Heilman's farm?

Ans. Because it was the first day we cut grain on the 5th, and it was a new machine. That was something new. I never saw a reaper before with a self-rake like that.

Int. 45. Have you any paper or memorandum by which you can fix the date other than the fact that you worked for Mr. Heilman on July 5th?

Ans. Nothing but my book.

Int. 46. Does your book show that Mr. Heilman received a new machine on that day?

Ans. No; that was not my business,—that was his.

Int. 47. Does your book show that you assisted in harvest?

Ans. The book does not show that I cut grain, but I know that. I know that I drove the machine.

Int. 48. The book shows nothing but that you worked for Mr. Heilman on the 5th of July; is not that so?

Ans. 49. The book shows only that I worked for him, but I know that was the day we set up the machine.

Int. 50. How do you know that it was not in July, 1862, as your book shows that you worked there in July, 1862?

Ans. Because we built a new house, and that I can show you at the gable end of the house, to-day. I did not build it, but my father-in-law built it.

Int. 51. My question is, have you anything to show, or can you swear positively, other than from memory, that it was not in July, 1862, that that machine was tried on Mr. Heilman's farm?

Ans. Yes, sir; that I can swear if you put me on forty Bibles, that it was on the fifth day of July, 1861. The day before was the 4th of July.

Int. 52. You have nothing to show that it was not in July, 1862?

Ans. No; but I know it was not.

Int. 53. You say Mr. Heilman had the machine before it was first tried. Please state when he first received the machine at his farm?

Ans. I can not tell you when he got it.

Int. 54. Who set up that machine?

Ans. One of Mr. Hoffheins' hands.

Int. 55. Give me his name?

Ans. It was Michael Link.

Int. 56. Do you distinctly remember that now?

Ans. Yes, sir; it was Michael Link.

Int. 57. Were you not, on a former occasion, asked who assisted

in putting up that machine, or who were present, and if so, did you give the name of Michael Link as one of the parties ?

Ans. That I don't know.

Int. 58. Was Mr. Hoffheins present when the machine was set up and operated?

Ans. There were some more there but I don't recollect who.

Int. 59. My question is, was Hoffheins there?

Ans. That I do not know.

Int. 60. Do you mean to say that you can not remember whether Mr. Hoffheins himself assisted in setting up that machine and was present when it was tried ?

Ans. I do not know whether he was or not.

Int. 61. Did you not testify about the year 1864, on behalf of Mr. Hoffheins, in reference to this same machine ?

Ans. I was a witness before ; but I can not fix the date.

Int. 62. At that time you had a much better recollection of the circumstances connected with the same than you have now ?

Ans. Some things I think I had.

Int. 63. All the statements you made at that time were the truth, were they not ?

Ans. Yes, sir ; to the best of my recollection.

Int. 64. Did you not on that occasion testify that Mr. Hoffheins was not present during the trial of that machine ?

Ans. That I do not recollect now.

Int. 65. I read now from your former deposition "12th interrogatory. Was Mr. Hoffheins present at the trial, and did he make known that that machine was his invention ? At the time that I was there Mr. Hoffheins was not present. One of his hands that set it up was there." Having made that statement in the year 1864, do you not think now, the fact of having been recalled to your mind, that that was the case ?

Ans. I do not recollect that he was there.

Int. 66. But you distinctly remember Michael Link being there ?

Ans. Yes, sir; Michael Link was there.

Int. 67. When asked in 1864 who was present during that trial, you said, "Jacob Welcomer, Mr. Heilman himself, and others

whom I don't recollect." Now on that occasion you could not remember Michael Link being present, and now you distinctly remember it after a lapse of fifteen years; will you swear positively that Michael Link was there?

Ans. As near as I can recollect, he was the man who put up the machine.

Int. 68. Have you talked with Michael Link lately in reference to this matter?

Ans. I have not.

Int. 69. Did Michael Link inform you yesterday, when here, or the day before, that he was the person who set up that machine, or did you hear anybody say so?

Ans. Michael Link didn't say nothing to me.

Int. 70. Did you hear anybody say that he was the person who set up that machine?

Ans. No, sir; but it got in my mind since I was subpœnaed in this case, that Mike was the man.

Int. 71. Prior to the setting up of that machine on that day, had the machine been used before by Mr. Heilman?

Ans. That I don't know.

Int. 72. Was the machine put together when you first saw it?

Ans. They were putting it together when we got there. We cut around the piece with the cradle; but it was not there when they commenced.

Int. 73. When you first saw the machine had it the seat on?

Ans. When they told me to sit on for reaping, it was on.

Int. 74. Who told you to sit on it?

Ans. Heilman told me.

Int. 75. Did he put the seat on himself?

Ans. No, he didn't put it on; he didn't understand it.

Int. 76. Did you see the seat put on, or was it on when you got there?

Ans. The seat was on when I brought the horses to hitch up.

Int. 77. Did Mr. Heilman get on the seat himself?

Ans. No; I was on.

Int. 78. Was there anybody else on the seat?

Ans. Not that I know.

Int. 79. You were there all the time that evening?

Ans. I was till night.

Int. 80. Were you there the next day?

Ans. The next day I was there.

Int. 81. Did you see anybody sit on the seat that day?

Ans. Yes, sir; there were persons sitting on, but I don't know who they were.

Int. 82. How long did anybody sit on the seat that day?

Ans. Well, when they stopped at the end, then they got on and tried it.

Int. 83. But no one was on while the machine was reaping, was there?

Ans. I don't know that anybody else was on.

Int. 84. Did you sit on that seat and drive the machine on the second day?

Ans. I drove it on the second day, while on the seat. I was sitting on the seat.

Int. 85. How many horses were hitched to the machine?

Ans. We had two in when we tried it.

Int. 86. And this was the next day or morning after the evening you first tried the machine?

Ans. I sat on the next morning, I do not know how long. Heilman commenced to drive.

Int. 87. You drove that machine the next morning, and sat upon the seat while driving, I understand you?

Ans. I am not positive, but I think it was in the morning.

Int. 88. Did you drive that machine until it broke?

Ans. I think Heilman drove it when it broke.

Int. 89. Where did Heilman sit?

Ans. As near as I can tell, he had three horses, and he was sitting on the horse.

Int. 90. Are you willing to swear that there were not four horses attached to that machine during the entire morning, until the machine broke?

Ans. That I can't tell you.

Int. 91. Do you mean to say that if four horses were used you sat upon that seat and drove?

Ans. Not with four horses.

Int. 92. Did you drive four horses in the evening?

Ans. In the evening we had but two.

Int. 93. Why did not Mr. Heilman get on the seat and drive the same as you done?

Ans. Because he had three or four horses, I don't recollect which.

Int. 94. Did you change the horses; during the morning, or did you use the same team during the entire morning?

Ans. I don't recollect, but it seems to me we started with two horses, and the machine ran very heavy, and then he put four in.

Int. 95. How long did you run the machine the next morning before it broke?

Ans. I don't know. I can't recollect that.

Int. 96. After the machine broke, what did you do with it?

Ans. I am not certain, but I think it was raked off by hand.

Int. 97. Did you not continue to work for Mr. Heilman after the machine broke?

Ans. That I don't recollect.

Int. 98. Can you recollect nothing after the machine broke?

Ans. I am not positive, but I think it was raked off by hand.

Int. 99. Did you ever see that machine afterwards?

Ans. That I can't recollect.

Int. 100. Where was the seat located on that machine, on the evening that you sat upon it and drove?

Ans. In front, on the outside.

Int. 101. Was it not at the extreme outer end of the front cross-piece?

Ans. That I don't know; but I recollect it was front on the outside.

Int. 102. Was it just outside of the wheel?

Ans. That I can't tell exactly.

Int. 103. Was not the seat bolted on to a piece, and that piece bolted on to the end of the cross-piece?

Ans. That I can't tell.

Int. 104. Did you not, in 1864, identify a model (Exhibit A) as being a correct representation of that machine?

Ans. That I can't tell.

Int. 105. Was the seat on that machine an ordinary S-spring-seat?

Ans. That I can't tell for certain; but I think it was.

Int. 106. Did you see the seat placed on any other part of the machine?

Ans. Not that I know of.

Int. 107. Did you ever see that machine used as a mower?

Ans. No, sir.

Int. 108. Was there any other place on that machine for a seat?

Ans. Between the two wheels.

Int. 109. Why did you not put the seat there and sit on it while reaping?

Ans. They thought the rakes would touch the driver by sitting there.

Int. 110. You mean a person could not sit there without being hit by the rakes?

Ans. I think not.

Int. 111. And that was the reason you didn't put the seat there, was it not?

Ans. I suppose that was the reason.

Int. 112. When you sat upon the seat, how near did the rakes come to your head?

Ans. That I don't know; but they didn't hit me.

Int. 113. You had to keep a pretty sharp lookout that they did not hit you?

Ans. No; I could drive as though there was nothing in my way.

Int. 114. And how long did you drive that evening, while occupying the seat?

Ans. That I don't recollect; I drove until night.

Int. 115. Did you cut more than one round that evening?

Ans. Yes, sir; we cut more than one round.

Int. 116. Did you cut ten rounds?

Ans. That I don't know.

Int. 117. How many rounds would it take to make ten shocks?

Ans. That I don't know.

Int. 118. How many rounds of a four-acre patch would you have to make in order to get, say ten shocks?

Ans. That I can not tell. You ought to know better than I, you are an attorney.

Int. 119. Mr. Heilman would be likely to know about how much you cut that evening?

Ans. I do not know.

Int. 120. You have stated that you testified on a former occasion for Mr. Hoffheins. Have you read over recently the deposition you gave at that time?

Ans. I read it over some time ago, but I can not tell when.

Int. 121. Was it at that time you gave your direct examination in this case at York, Pennsylvania?

Ans. It was before that, but I do not recollect how long.

Int. 122. Did you not read that deposition, or a part of it, yesterday or since you have been here?

Ans. No, sir.

Int. 123. At the time you read the deposition, was it just previously to giving your testimony in this case at York, Pennsylvania?

Ans. It was before, but I don't know how long before.

Int. 124. Well, about how long?

Ans. It was in this year.

[Signature of witness waived by consent of counsel.]

Peter Shellenberger, recalled and cross-examined.

By Mr. Bennett.

Int. 1. With the exeeption of a new platform rake, post and rake, the machine which you got from Mr. Shireman was the same as he received from Mr. Hoffheins, was it not?

Ans. Yes, sir.

Int. 2. Had that machine a seat on?

Ans. Yes, sir.

Int. 3. For what was that seat to be used?

Ans. Well, for mowing grass and for mowing grain; we could not use it for mowing grain.

Int. 4. You never used it for reaping?

Ans. Not for reaping grain.

Int. 5. You say a new rake-post was put on, and new rakes; was the rake-post made lower or higher?

Ans. I don't know whether it was lower or higher; I don't know how long the first rake-post was.

Int. 6. The only object in altering the machine was that you desired a longer cutter-bar, was it not?

Ans. Yes, sir; I wanted the same cutting-bar that Shireman put to his machine.

Int. 7. You had no objection to the rake-post as it was originally on that machine?

Ans. No, sir.

Int. 8. And the rake-post on the machine, before it was altered, was about the same height as the rake-post that Shireman put on for you?

Ans. That I can't tell; I measured neither of them.

Int. 9. Did they appear to be of about the same height?

Ans. I can not form any idea.

Int. 10. The rake and the rake-post on the machine which you got from Mr. Shireman were made after the same style and pattern?

Ans. Yes, sir; of course it worked the same way.

[Signature of witness waived by consent of counsel.]

H. W. Eisenhart, recalled and cross-examined.

By Mr. Bennett.

Int. 1. Did the machine which Mr. Shireman got from Mr. Hoffheins in 1864 have a driver's seat on it?

Ans. Yes, sir.

Int. 2. Was the seat on the machine when it came to the shop?

Ans. I do not think it was.

Int. 3. It was put on afterwards?

Ans. It was put on afterwards.

Int. 4. The whole machine was set up, was it not?

Ans. Yes, sir.

Int. 5. Was there not a place for a seat directly back of the axle, between the two wheels?

Ans. Well, I don't know whether the seat was located in front of the axle, right in front of the axle, or in the rear of the axle, but it was connected close to the axle.

Int. 6. Where was the seat to be put on that machine when it was used as a mower?

Ans. That I can not remember.

Int. 7. Was it intended that the seat should occupy the same position when used both as a reaper and as a mower?

Ans. I don't think it was.

Int. 8. Why was it that the seat was not to be used the same in reaping as it was in mowing?

Ans. I suppose it was on account of the rake.

Int. 9. You mean the rakes would hit the driver if he sat on the seat?

Ans. On the same seat for mowing; you mean that?

Int. 10. Yes, sir.

Ans. Yes, sir; I think that seat was too high—the mower's seat.

Int. 11. You mean that, when the machine was used as a reaper, a man could not have occupied the mowing-seat without being struck and knocked off by the rakes?

Ans. No, sir; he could not occupy that seat.

Int. 12. And the location of the seat for mowing was about the centre of the main frame of the machine, was it not?

Ans. I don't recollect that.

Int. 13. It was an ordinary S-spring-shaped seat.

Ans. I think it was S-shaped—a steel spring.

Int. 14. Did you ever see that machine used as a reaper?

Ans. I did not.

Int. 15. Could the driver have occupied the seat when placed anywhere on the machine during the actual operation of reaping?

Ans. You mean the reaper's seat?

Int. 16. Yes, sir. I mean any seat on the machine during the actual operation of reaping on any and all kinds of ground?

Ans. I don't know about that; I never saw the machine in oparation.

Int. 17. You have considerable doubt as to that?

Ans. I don't know; I think a man could set on.

Int. 18. But you never saw the machine in practical operation?

Ans. I never saw the machine in operation; not to my knowledge.

Int. 19. On your direct examination you say that machine was sold to Shellenberger, but that a new platform, new rake-post, and arms were put on before he took it away?

Ans. Yes, sir.

Int. 20. With the exception of the rake-post, rake, and platform, the machine was identical?

Ans. Yes, sir.

Int. 21. And you are now of the opinion that the rake-post which you put on Shellenberger's machine was somewhat shorter?

Ans. Yes, sir.

Int. 22. Have you any distinct recollection as to the exact difference between the two posts?

Ans. I have not; not exactly.

Int. 23. You think it was somewhere about six inches?

Ans. I think it was about five and one-half to six and one-half inches, as near as I can recollect.

Int. 24. And the platform, rake, and rake-post, which you took from that machine, was put on a machine that was sold to one George Baum, were they not?

Ans. Yes, sir.

Int. 25. Were the other parts of the machine which Baum purchased made after the model of the Hoffheins machine?

Ans. Yes, sir.

Int. 26. It was identical?

Ans. The main frame and the running part, with the exception of the platform and post; is that your question?

Int. 27. Yes, sir.

Ans. Yes, sir.

Int. 28. And then when you put the platform, rake, and rake-post of the old machine on, you had an exact duplicate of the original Hoffheins machine, had you not?

Ans. Yes, sir; I will here add, with the exception of the rake-shifter; the rake-shifter was made different.

Int. 29. By that you mean the throwing of the rake in and out of gear?

Ans. Throwing the rake out of gear. Yes, sir.

Int. 30. Did Mr. Shireman continue to build machines after the Hoffheins' model to some extent?

Ans. He built four or five.

Int. 31. Were those machines constructed so as to admit of a driver's seat upon the machine during the operation of reaping?

Ans. No, sir.

Int. 32. He could not have done it, could he?

Ans. No, sir.

Int. 33. You are somewhat familiar, are you not, with the working and operation of reaping-machines?

Ans. Yes, sir.

Int. 34. Does it not make a great deal of difference in the height at which the rake passes over the main frame whether the reaper is being used on level ground or on heavy, deep-furrowed ground?

Ans. Yes, sir; it makes considerable difference when you get to the outer end of the rake, but when you get close to the rake-post it don't make so much difference—close to where the seat was located.

Int. 35. What would be the variation in the height so as to provide for any and all cases?

Ans. Well, it might be from four to six inches to where the seat was located.

Int. 36. How much do you suppose it would be at the outer end of the rakes or beaters?

Ans. It might be nearly twice as much.

Int. 37. Is it not a very common occurrence, in reaping on furrowed land, that the outer wheel of the platform has an elevation of one to two feet above the level of the inner wheel?

Ans. Never as much as two feet. I never saw it as much as two feet.

Int. 38. As much as from a foot to eighteen inches or thereabouts as the ground would vary?

Ans. I don't think I ever saw it as much as eighteen inches.

Int. 39. How much have you seen it?

Ans. It might be a foot sometimes.

Int. 40. Did you ever assist in the setting up of these Hoffheins self-raking machines?

Ans. Yes, sir.

Int. 41. And after they were set up you would generally watch their operations to see that they were in perfect working order, would you not?

Ans. Yes, sir.

Int. 42. On any of those occasions did you ever see the divider wheel drop into a furrow, and also the inside driving–wheel as well?

Ans. Yes, sir; I have often seen the inside driving-wheel drop.

Int. 43. Now, suppose the inside dividing wheel was to drop into a deep furrow, what effect would that have upon the rake?

Ans. It would throw the rakes down lower, of course.

Int. 44. Did you ever see the rakes thrown down so low as to strike the outer driving-wheel, or any portion of the platform?

Ans. No, sir; never.

Int. 45. How near do you suppose it would have come to the main frame, the outer driving-wheel, in the most extreme case?

Ans. Are you speaking about the high rake-post now?

Int. 46. No, sir; I am speaking about the machine which you had to set up, as a general thing.

Ans. It came down, perhaps four or five inches. I do not know that I ever watched that so close. It depends upon how high you set that platform from the ground. You might set that platform, as it is very often set, ten or twelve inches, for cutting rye, and then it would not come down so close.

Int. 47. Suppose you were to adjust the machine for cutting a

four-inch stubble, or even lower than that, then the rakes would come down still nearer to the platform, would they not?

Ans. Not to the platform, but to the driving-wheel.

Int. 48. In making a self-raking reaper, is it not necessary to allow a very considerable amount for all these variations of which we have been speaking, in order to make the machine perfectly safe?

Ans. Of course it is necessary to allow for that.

Int. 49. If you did not, there would be a liability of the rake and beaters striking the outer driving-wheel, would there not?

Ans. Yes, sir; you might make it low enough, so that it would strike.

By Mr. Latrobe.

Int. 50. If the rake-post was made five inches higher, would not the effect be to allow the man, in the revolution of the rakes, ten inches more space?

Ans. Yes, sir.

[Signature of witness waived by consent of ceunsel.]

H. W. Eisenhart, recalled and examined.

By Mr. Latrobe.

Int. 1. Did you see what is spoken of in your examination-in-chief, as the Shellenberger machine?

Ans. Yes, sir.

Int. 2. Where was it when you saw it?

Ans. In Mr. Shireman's shop at East Berlin, Adams county, Pennsylvania.

Int. 3. Had it a seat on for a driver?

Ans. Yes, sir.

Int. 4. Where was the seat placed?

Ans. It was connected at or near the centre of the main frame, between the driving wheels.

Int. 5. Did you ever see a man on the seat while the rakes were being revolved?

Ans. Yes, sir.

Int. 6. More than one man?

Ans. Yes, sir.

Int. 7. Under what circumstances did the man get on the seat when the rakes were revolved?

Ans. I suppose it was to see how the rakes would pass the man's head, at least all the hands in the shop were sitting on it to see how the rakes would revolve over a man.

Int. 8. Where was it that you saw it while men were seated on it, and the rakes were being revolved?

Ans. In Shireman's shops.

Int. 9. Could a man have sat on that machine to drive the team in the work of actual reaping over such ground as you have ordinarily in York county?

Ans. Yes, sir.

By Mr. Bennett.

Int. 10. Did you ever see that machine in operation?

Ans. I did not.

Int. 11. Then it is a mere matter of judgement with you?

Ans. It is a matter of judgement, but I am positive that a man could have road on that machine.

Int. 12. You never saw any one ride on it while it was in actual operation of reaping?

Ans. No, sir.

OFFICE SUPREME COURT U. S.
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Supreme Court of the United States,

No. 142.

REUBEN HOFFHEINS

vs.

C. RUSSELL AND COMPANY AND OTHERS.

Appeal from the Circuit Court of the United States for the Northern District of Ohio.

BRIEF FOR APPELLANT.

GEO. H. CHRISTY,
JOHN H. B. LATROBE,
for Appellant.

Supreme Court of the United States,

No. 142.

REUBEN HOFFHEINS

vs.

CHARLES RUSSELL AND COMPANY, AND OTHERS.

Appeal from the Circuit Court of the United States for the Northern District of Ohio.

In this case a Bill was filed on the 17th February, 1875, in the Circuit Court of the United States for the Northern District of Ohio, by Reuben Hoffheins, to restrain the Defendants from infringing certain Letters Patent of the United States granted to the Appellant on the 20th May, 1862, and re-issued May 20th, 1866, known as Re-issue No. 2224, for a new and useful improvement in Harvesters, and from infringing certain other Letters Patent, also for an improvement in Harvesters, granted on the 3d November, 1863, re-issued in two divisions on the 28th February, 1865, numbered 1888, and November 7th, 1865, No. 2102, respectively—which division No. 2102 was subsequently re-issued February 19th, 1867, known as No. 2490. *See Record, pp.* 1, 2, 3. To this Bill an answer was filed October —, 1877, admitting the granting of the re-issued Letters Patent on which the suit was brought, but denying their validity, denying their infringement, denying their originality, and setting up alleged prior inventions of the same things, particularly referred to in the Record. *See Record, page* 236. To this a replication was filed on the 21st August, 1875, and the parties, Appellant and Appellees, proceeded to take the testimony on their respective sides that is to be found in the Record, and which is discussed in the brief.

Supreme Court of the United States,

No. 142.

REUBEN HOFFHEINS

vs.

C. RUSSELL AND COMPANY AND OTHERS.

Appeal from the Circuit Court of the United States for the Northern District of Ohio.

BRIEF FOR APPELLANT.

On May 20th, 1862, United States Letters Patent, No. 35,315, were granted to Reuben Hoffheins, one of the Complainants, for certain improvements in harvesters. This Patent was reissued May 20th, 1866, and is known as Reissue No. 2,224.

A second harvester patent was issued to Hoffheins, November 3rd, 1863, No. 40,481, and this patent was reissued February 19th, 1867. It is known in this case as Reissue No. 2,490.

Certified copies of these patents, both of which are infringed by the Appellees, are in evidence, with full and complete models. "Complainants' Exhibit, Substitute Model of Reissue No. 2,224," proven by Jacobs, the model maker (Record, p. 235,) is a correct embodiment of the subject-matter

of Reissue No. 2,224, the first patent above-named. The other patent, Reissue No. 2,490, is represented with substantial correctness in model "Complainants' Exhibit No. 63."

See Hoffheins' testimony, Record, p. 74.

A model of Appellees' machine is also in evidence as "Complainants' Exhibit, Defendants' Harvester." The correctness of this model is proven by Appellant's expert, Renwick, (Record, p. 52, q. 60,) and is not disputed. The manufacture and sale of such machines is admitted on the part of Appellees. Record, p. 30.

Of Reissue No. 2,224, Appellees infringe claims 1, 8, 9, 11, 12, 14, 16 and 19.

Of Reissue No. 2,490, they infringe claims 1, 2, 6, 7 and 9.

The specification in full of Reissue 2,224 is given in Record, pp. 60, 68; and of 2,490 on pp. 60, 73.

Both patents refer to machines of the same class. The more prominent distinctive features of such machines, as involved in this controversy, are:

1st. A two-wheeled main or draft frame, having a stiff tongue, that is, a tongue rigidly connected to the frame.

Two wheels are necessary, in order to secure lateral stability, or to prevent tipping to one side or the other.

A stiff tongue is essential, in order to prevent tilting forward or back.

Also, the main or draft frame must be self-supporting, in order that it may be used with a hinged cutting apparatus, and especially so in mowing or grass cutting, where it is essential that the finger bar should run loosely on the surface of the ground. In such use, that is, with a hinged cutting apparatus, the main frame can derive no support from the cutting apparatus, or, in other words, must be self-supporting.

2nd. A hinged cutter bar and cutting apparatus.

The *hinging* of the cutter bar is important in that it allows the cutter bar to conform to such inequalities of the ground as are ordinarily encountered in grain and grass harvesting, without being affected, while so working, by any irregularity of motion in the draft frame, as the latter runs over like inequalities.

3rd. A "quadrant-shaped" platform on which the grain is regularly and continuously deposited as it is cut, until enough has accumulated to form a gavel; with,

4th. A device or devices to press or incline the grain backward upon the platform, as it is cut; since otherwise it would fall forward or sideways, or indiscriminately in all directions, and no "gathering" function would be performed.

5th. A device or devices which will sweep the gavel thus gathered, in a circular path around the grain platform, and deliver it off the inner edge of the platform, in rear of the the main frame or track, so that it will be out of the path of the horses on the next "round," and in convenient condition for binding.

6th. To perform the "gathering" and "raking" functions just mentioned, revolving "beaters" and "sweep rakes" are employed, which alternately, or in other desired order, enter the standing grain a little in front of the cutters, press the grain back upon the platform, the beaters passing over the cut grain, and the rakes raking it off as just mentioned. To get such beaters and rakes back again into the uncut grain, they must rise and pass over the draft frame, and in order that the driver may ride on the machine, they must move over in such a path as to clear his head, or so as not to come in contact with him while oocupying his seat on the draft frame. This latter feature constitutes one of the elements of novelty in the Appellant's Patent, No. 2,490, as will presently appear.

7th. A rake post must be employed to support the rakes and beaters. *One of the essential and most important elements of the inventions now in controversy, involves the loca-*

tion of such rake post on or near the heel of the cutting apparatus, at the front corner of the grain platform, next the draft frame of the machine. The rakes and beaters, when performing their respective functions as regards the grain, must always move in the same path, relative to the cutting apparatus and grain platform; and as the latter follow the inequalities of the ground, and are, when in use, continually rising or falling, more or less, at one end or the other, the rake post, supporting the centre of motion of the rakes and beaters, must conform thereto, and to that end should occupy the location here designated. Such a rake post, so located, in connection with a hinged cutting apparatus and grain platform, is absolutely essential to machines of this class, and, as will presently appear, were new with Hoffheins, the inventor and patentee.

8th. While in *grass* cutting, the finger bar must run on the ground, it must, in *grain* cutting, run clear of and a little above the surface of the ground. To accomplish this, the outer or grain end of the cutting apparatus is raised, and with a divider attached, is carried by a grain wheel, in the ordinary way. The inner end of the cutting apparatus, or the end next the main frame of the machines, was, previous to the date of the Appellant's invention, hung to or suspended from the main frame, at a point outside of the inner or adjacent drive wheel. The Appellant, as one of the elements of his invention, carried this point of suspension over to a point in rear of the adjacent drive wheel, or beyond its outer edge, and thereby transferred a portion of the weight of the cutting apparatus, grain platform, and devices connected therewith, to the opposite drive wheel, whereby a more equal and uniform distribution of weight and strain was secured; and he also prevented or obviated thereby, in an effectual manner, the tendency of such weight to tip or tilt the draft or main frame. This he accomplished by the use of an arm or bracket, designated as "2" in his Patent, Reissue No. 2,224, and which is rigidly connected to and extends from the rake post F, or its metal foot piece, beyond the outer

edge of the tread of the inner or adjacent drive wheel. A link or chain is employed to connect the end of this arm or bracket 2 with a hook on the main frame above.

It should also be added that this feature lessens materially the strain on the rake post and rakes, caused by running over uneven ground, since, by carrying the point of suspension beyond the rake support, it prevents a too sudden and abrupt deflection of the rake post, rakes and beaters.

Other features of construction and operation material to the case will be referred to presently.

Infringement.

As already noted, the model, "Complainant's Exhibit, Defendants' Harvester," is a correct representation of machines made and sold by the Appellees. A comparison of this with Appellant's Patents, will clearly establish the fact of infringement.

The first claim of Appellant's Reissue No. 2,224, reads as follows:

"1st. A sweep rake which is mounted upon the heel of the finger beam proper, or upon the inner front corner of the platform of a harvester which has its cutting apparatus and platform hinged to the draft frame, all in such manner that the rake arm sweeps the platform from front to inner side, and maintains a correct position in relation to the finger beam and platform during the rising or falling movements thereof on the joint or joints, by which the finger beam is connected to the draft frame, substantially as set forth."

See testimony of *Ren[illegible]ick*, Record, p. 30, q. 5.

This claim is, to the extent of it, thoroughly descriptive of Appellees' machine. The latter contains every element of the claim, without any substantial change or departure as to

construction or operation. Like devices, of like construction, co-act therein in a like manner, to a like end.

Denial of infringement is based by Appellees' expert, Eliot, on the single fact that in Appellant's Patent, the radially opposite rake and beater arms are connected with each other on top of the rake post, with a slight inclination of the post, so as to constitute what are termed "diametrical rakes," while, in Appellees' machine the rake and beater arms are each separately jointed or articulated on top of a post, which is exactly perpendicular, thus making what are called "radial rakes." Inspection of the models will suffice to show that this difference of construction is not material or substantial, in so far as relates to the invention in question. Separating the Appellant's rake arms does not destroy their identity as such. They are rake arms still; and when independently pivoted on the top of the rake post, as in Appellees' machine, they follow the same path, have substantially the same motions, and do identically the same work.

But the *emptiness* of this theory of Appellees was most clearly and convincingly shown by a cross-examination of Eliot, in which he admitted in effect that in two previous cases he had expressed opinions directly the reverse of those here given, and that as regards the work performed, there was no difference between "diametrical rakes" (Dorsey and Hoffheins) and "radial rakes," (McCormick, Marsh and Russell.)

Record, pp. 294, 295, Cross-Q. 127, 138.

Fortunately, however, this very question has already been judicially determined in one of the cases referred to: *Dorsey Harvester Rake Co. vs. Marsh*, 6 Fisher's Patent Cases, 387, 398, before McKennan, Circuit Judge. It was there held, in effect, that in this class of machines "radial rakes" and "diametrical rakes" were mechanically *the same thing*.

The other fact referred to, that Appellant's rake post is slightly inclined or bent so that its top or upper end shall overhang the corner of the draft frame, while Appellees' rake post is straight, is, if possible, of less importance in distinguishing the invention, than the difference between the rake arms. The actual point of support, viz., at the base or lower end of the rake post, is identically the same in both machines, and in both it is so made for identically the same purpose. The Courts have uniformly and, we may say, universally held, that changes in form or proportion which do not involve any substantial change in function or operation, are merely colorable variations, and do not relieve the device so changed, from the charge of infringement.

Infringement depends not upon the form of the device, or upon the name given to it, but upon the function it performs; and it is well settled law that if devices, though different in fact as well as in form, are employed *in a similar combination*, to perform the same function in the same way, they are substantially the same.

Graham vs. Mason, 5 Fisher, 21.
Hitchcock vs. Tremaine, 4 Fisher, 508.

The same principle has been applied in many cases. A few will suffice.

In *Winans vs. Denmead*, (15 How., 330,) a question arose as to form. In laying down the principles which govern such cases, the Court say:

"It is generally true, when a patentee describes a machine, and then claims it as described, that he is understood to claim, and does by law actually cover not only the precise forms he has described, but all other forms which embody his invention; it being a familiar rule, that to copy the principle, or mode of operation described, is an infringement, although such copy should be totally unlike the original in form or proportions." p. 342.

The Court further add, p. 343:

"Where form and substance are inseparable, it is enough to look at the form only. Where they are separable, where the whole substance of the invention may be copied in a different form, it is the duty of Courts and juries to look through the form for the substance of the invention—for that which entitles the inventor to his patent, and which the patent was designed to secure; where that is found, there is an infringement, and it is not a defence, that it is embodied in a form not described, and in terms not claimed by the patentee."

Both reason and authority being so directly and unequivocally adverse to Appellees' present theory, the conclusion would seem to be unavoidable that Appellees have infringed the first claim of Reissue No. 2,224.

The essence of the invention here is the location of the post on the cutting bar and platform, which secures parallelism between the beaters and rakes, and the cutting bar and platform, at the moment of gathering, cutting and raking; and whether the post is a straight one, or is a bent one, is immaterial.

EIGHTH CLAIM.—The next claim in order, which Appellees infringe, is the 8th of Reissue 2,224. It is as follows:

"8th. In a harvesting machine, which has its cutting apparatus hinged or jointed to the main frame, in such manner as to allow it to conform at both ends to the undulations of the ground, and a rake *mounted upon the said jointed cutting apparatus, or upon the platform thereof,* I claim so constructing and arranging the several parts that the support of the rake can occupy a position outside of the inner drive wheel B, or a position which is between the point of suspension *h* and the outer divider G, and can also be hung or be suspended below the draft frame, substantially as described."

See testimony of *Renwick:* Record, p. 33, q. 6.

The first part of this claim specifies or identifies the kind or class of machine to which the invention is to be applied; and the latter part of the claim more particularly distinguishes the invention. In effect, however, it is a claim for the combination of the elements named therein; and so particularly are they named, and so clearly are their functions defined, that a comparison of the subject-matter of the claim with the model of Appellees' machine, will suffice to render the fact of infringement perfectly clear. Every element of the claim, both those which distinguish the class or kind of machine, and those which specify the invention, will be found, without any material or substantial change, in Appellees' machine. "Characteristic resemblance," to use the language of Judge McKennan in *Union Paper Collar Co. vs. White*, "is the fairest test of substantial identity."

Denial of infringement is apparently based on the difference between "diametrical rakes" and "radial rakes" already referred to, and inclination of the rake post, differences that are merely "colorable variations," and are not material to the invention in controversy. The claim calls merely for "a rake mounted on the said jointed cutting apparatus, or upon the platform thereof," whereby "the support of the rake can occupy a position," etc., as therein designated. Such feature clearly appears in Appellees' machine.

NINTH CLAIM.—This claim of 2,224 is as follows:

"9th. Effecting a combination of a rake and reel located substantially as described, and a finger beam and platform, with the main frame by means of a hinged draw bar *b*, and hinged brace I, a hinged suspender *f*, and an extension bracket 2, or their equivalents, substantially as and for the purposes described."

Renwick: Record, p. 35, q. 7.

Explanatory of this claim it should be stated, that the "hinged bar *b*" is a draw bar which extends from the shoe

at the inner end of the cutter bar to the front inner corner of the main frame, so as to transmit the drawing power of the team more directly to the cutter bar. The "hinged brace I," (sometimes known in the art as the "radius bar,") extends from the inner end of the cutter bar, and in the same general direction as the cutter bar, across to the opposite side of the main frame, near its rear outer corner, where it is pivoted to the main frame. These two devices, along with the main frame, hinged cutter bar, and grain platform, constituted the main features of what is spoken of in the testimony as "the Ball machine." To this machine, Appellant added certain improvements; and among others, *the rake post, rakes and beaters or reel, mounted on the heel of the cutter bar or inner front corner of the platform;* and he also added "an extension bracket 2," which latter, with "a hinged suspender *f*," makes provision for the suspension of the inner end of the grain platform and the devices appertaining thereto, from the main or draft frame at a point toward the central longitudinal line of the draft frame, and below such frame.

These two elements, both novel in machines of this class, are combined by Appellant with such of the elements or features of the old Ball machine, as are necessary to make a co-operative combination. Such means of suspension co-act with the hinge joint, in effecting the desired combination of "rake and reel," "finger beam and platform" with "the main frame," as stated in the claim, and set forth at length in the specification.

This Ball machine was upon two wheels, with a seat for a man who raked the grain from the platform as it fell there. (Appellant's proof, 81.) It had its cutting apparatus connected with the main frame by a drag bar, one end hinged to the front cross piece on the grain side, and the other attached to the inner end of the cutting apparatus; with a stay bar hinged at one end to the inner end of the cutting apparatus, and at the other to the rear outer corner of the main frame. The inner shoe had a cross hinge to give it a rolling movement, so that the cutting apparatus had a flexi-

ble connection to accommodate it to the undulation of the ground, independent of the main frame. There was a platform attached to the rear of the cutting bar, which last was suspended at its inner end, by a chain to the grain side of the machine, outside of the inner wheel.

Every element of the Appellant's combination appears in the model of Appellees' machine, and combined in identically the same manner, and performing, as the result of such combination, identically the same functions. New elements and old are alike copied. The novel location of "rake and reel" is preserved, and no difference exists in the means of suspension, except that the "extension bracket 2" is made a little longer, so as to come still nearer to the central longitudinal line of the main frame, and a chain is substituted for a link. But neither difference works any change of result. Being of like construction, and doing the same thing in the same way, they must necessarily be regarded as mechanical equivalents, and as such the benefit of them would be awarded to the patentee by law, even if "equivalents" were not specifically mentioned in the claim.

Foster vs. Moore, 1 Curtis, 279, 280–291.

Byam vs. Farr, 1 Curtis, 260.

The Appellees' expert, Eliot, in trying to assign reasons for non-infringement, repeats the story of "diametrical rakes" and inclined rake post. It is the only difference he can find; and on cross-examination, as already stated, he admits (Record, p. 295; Cross-Q. 136, 137,) that, even with such difference, the functions and manner of performing such functions, are in the two machines *identically the same.*

All that was said in regard to this difference, while discussing the first claim, applies here with even greater force.

Whether the rake and reel arms are "diametrical" or "radial,"—whether the rake post is slightly inclined at its upper end, or is straight,—neither of these considerations have anything to do with that which constitutes the *gist* of

the claim, viz: the novel manner of effecting the combination, *of a cutting apparatus and grain platform carrying a rake post with sweep rakes and reels, on one side, with a main or draft frame on the other side.* So far as relates to the manner of making such connection, it is wholly unimportant and immaterial whether the rake and reel arms be "diametrical" or "radial," or whether the rake and reel post stands perfectly erect, or has a slight bend about half way up. The *combination* is precisely the same in either case, and the *results* of the combination in the two machines are in no respects different.

In the case of *Roots vs. Hyndman*, where the charges made by the Defendants were much greater than those which exist here. Judge Emmon (6 Forbes, 439,) said: "The benefits clearly perceived as resulting from the invention imposed upon the Court the duty of avoiding, if possible, an interposition which will hand them all over to an infringer."

On appeal, the Supreme Court—Mr. Justice Swayne delivering the opinion—affirmed the decree of the Court below on every point, and, in reference to the fact that appellant (Defendant below) had, notwithstanding various important changes, *adopted the gist of Complainant's Patent, the following vigorous language is used:*

"Why is this, and what are his object and purpose? We can imagine none but to gather where another had sown, and escape by simulation and subterfuge the consequences which the Act of Congress has prescribed for the unlawful appropriation of such property. There is scarcely a thought expressed in the work of the Appellees, so to speak, that is not found substantially transferred or closely copied in that of the Appellant."

Hyndman vs. Roots, 13 P. O. Gaz., 868, 870.

The conclusion seems unavoidable that the "thought expressed," just referred to as the *gist* of this ninth claim,

has been so "substantially transferred or closely copied" in Appellees' machine, that it must be held to be an infringement.

ELEVENTH CLAIM:

"11th. Preventing a too sudden or abrupt deflection of a rake and reel mounted upon a hinged joint cutting apparatus, by carrying the point of suspension beyond the rake support, toward the centre of the draft frame, by means substantially as described."

Renwick: Record, p. 38, q. 8.

Comparison of the subject-matter of this claim with Appellees' model, will show clearly that the latter is an infringement. It has:

1st. The same organization of rake and reel, considered with reference to the function of the combination, or the work to be done by it;

2nd. The rake and reel are similarly mounted, upon,

3rd. A like hinged joint cutting apparatus;

4th. The point of suspension of the rake support is carried forward;

5th. Toward the centre of the draft frame;

6th. *By identically the same means;*

7th. And *for identically the same purpose.*

Appellees' expert, Eliot, in endeavoring to disprove infringement of this claim, apparently relies on the alleged fact that, (to use his own language): "the organization of the raking apparatus in the Appellees' machine is substantially different from that in the reissued patent." (Record, p. 241.) But in developing his theory—he seems to place it solely on (1,) the inclination of the Appellant's rake post, and (2,) on the "gagging," as he calls it, of the pivotal connection at the inner end of the cutting apparatus, which

latter, as he claims, causes the rising and falling motion of the inner drive wheel to be communicated to the inner end of the cutting apparatus.

Considerations already presented show conclusively, that the difference between a straight rake post and one slightly inclined, is not material to the invention. And this conclusion receives the strongest possible confirmation in Eliot's admission on cross-examination, that this difference in rake posts is *not* material.

Eliot, Record, pp. 292, 293, Cross-Q. 117–119.
" " " 295, " 139–141.

The other point which Eliot tries to make—as to the "gagging"—is based on a misconception of the invention and patent. It is not proposed to prevent absolutely the transmissiom, to the rakes and reels, of inequalities of motion caused by running over the inequalities of the ground. That would be an impossibility. But the patent proposes and *accomplishes* the *lessening* of the motion so transmitted, or as stated in the claim, "preventing a *too sudden or abrupt* deflection of a rake and reel," etc. It is not denied that such result is a useful element of a harvester. It is not denied that such result is attained, by like means, in the Appellant's patent and in Appellees' machine.

It is respectfully submitted that the proof of infringement by Appellees of this eleventh claim is clear and conclusive.

TWELFTH CLAIM:

"12th. A continuously revolving rake which is mounted directly and wholly upon the platform or finger beam, so as to rise and fall therewith independently of the draft frame, said rake is located between the centre of the draft frame and the outer divider, and passes in at the front of the machine upon the platform and sweeps around to the inner side of the platform, substantially as described."

Renwick: Record, p. 39, q. 9.

The location of a continuously revolving rake and its supporting post, directly on the heel of the finger-beam, or inner front corner of the platform, in a "hinged joint" machine, was absolutely new with the Appellant.

The utility of such a structure has already been briefly referred to. Appellees do not deny utility.

A mere glance at the models will show clearly that the Appellees have incorporated this element of invention in their machine, and consequently infringe the claim.

The Appellees' expert, Eliot, assigns no reasons in support of his theory of non-infringement, other than those just referred to in discussing the eleventh claim. The insufficiency of those reasons has already been made apparent.

FOURTEENTH CLAIM:

"14th. The combination of a suspended hinge joint cutting apparatus of harvesters, and a combined rake and reel, which is mounted directly and wholly upon the suspended platform or hinged finger-beam, substantially as and for the purpose described."

Renwick: Record, p. 41, q. 10.

This claim adds to the 12th the element of suspension from the main frame, that is to say, *it calls for and covers the novel location of the rake post, rakes and beaters or reels, on the* suspended *platform and cutting apparatus of a hinged joint machine.* This element of suspension enables the platform and finger-beam, while carrying the rake post, rakes and reels, to rise and descend, so as to conform to the irregularities of the surface of the ground. and at the same time it facilitates the performance of the functions properly belonging to these devices, as already stated.

The Appellees' expert, Eliot, (Record, p. 255, q. 17,) gives no reason for denial of infringement, except by a general reference to differences mentioned in his previous answers; the insufficiency of which has already been made sufficiently clear.

Comparison of the claim with Appellees' model, will establish the *fact* of infringement beyond any reasonable doubt. The means of suspension are the same, and the result secured thereby is the same. The identity of all the *other* co-operative devices which go to make up the combination or construction which the claim covers, has already been considered.

SIXTEENTH CLAIM:

"16th. The combination of a combined rake and reel, mounted upon a hinge joint cutting apparatus, and a yielding belt tightener, substantially as and for the purpose described."

Renwick: Record, p. 43, q. 11.

The pertinency of this claim will be obvious when it is remembered that power must be taken from the driving gear in the main frame, for the purpose of operating the gear of the rakes and reels on top of the rake post; and that the distance between the main driving gear in the main frame, and the rake and reel gear on top of the rake post, is continually varying on account of the unavoidable inequalities of the ground, and the use of the hinge joint connection. This distance being a variable one, the device which transmits the power from one to the other, must, in order that the machine may be at all operative, be made practically extensible, or capable of transmitting power at different and constantly varying distances. In this patent, a belt is provided for the purpose, which runs around a pulley connected with the main driving gear, and a pulley on the rake gear. At every lessening or shortening up of the distance between these pulleys, the belt would become slack, and cease to operate, except for an additional yielding or spring pulley which the appellant added, in such manner that it will in such case automatically deflect some part of the belt out of its previous line of motion, and thereby keep it "taut" on its pulleys,

and continuously operative in transmitting power to the rakes and beaters. As such distance increases, the spring yields automatically, and the work goes on. This spring pulley is what is designated in the claim as "a yielding belt tightener."

The claim, in substance, covers "a yielding belt tightener," in combination with the novel element of the rake post, rakes and reels mounted upon a hinge joint cutting apparatus.

Such combinations appear fully and clearly in Appellees' model. No differences are claimed to exist except the immaterial features already disposed of, and in addition thereto: (1) That Appellees use a chain belt instead of a leather belt, and toothed sprocket wheels to engage the links of the chain instead of plain pulleys; and (2) that Appellees' belt tightener is simply a guide.

That the difference first named is immaterial, and the second does not exist, will fully appear from the reasons assigned by *Renwick:* Record, p. 43, who says—

"The yielding belt tightener of the Appellees' harvester, corresponding with that of the said 16th claim, is the device that is placed beneath the endless chain which drives the rake. This yielding belt tightener consists of a stock, carrying at its outer end a pulley to operate upon the chain; and it is fitted at its butt with a spring which causes the pulley of the belt tightener to operate upon the endless chain with a yielding pressure, and to keep it tight, notwithstanding the variations of the chain caused by the change of position of the hinged cutting apparatus, and the rake secured thereto, relatively to the frame to which the said cutting apparatus is hinged."

Also,

"I have taken into consideration the fact the belts represented in drawings of said reissue, is a belt with a continuous surface, while the belt of the said Appellees' harvester is an endless chain or chain belt; but I do not consider this difference material, because an endless chain is a well known

equivalent for an endless belt, for the purpose of driving machinery of various descriptions, and is frequently used in harvesters for such purposes."

It cannot be seriously contended that these differences are differences of *substance*. The law on this subject has already been referred to. Leather belts and chain belts have long been known and considered as mechanical equivalents; and it is no invention to substitute one for the other in a combination otherwise the same. If, as appears from the models, Appellees use a belt and a yielding belt tightener, to transmit power through the variable distance which separates the main driving gear in the main frame, from the gear on top of the rake post, the latter being located on a hinge joint cutter bar and platform, then they have made and used the combination covered by this claim, and, as to it, also, must be held to be infringers.

NINETEENTH CLAIM:

"19th. Providing in a harvester with the rake attached to its hinged finger beam or platform, an extensible means for driving the rake, which will permit the platform and rake to rise and fall together, and accommodate themselves independently of the draft frame to the undulations of the ground, substantially as described, and for the purpose set forth."

Renwick, Record, p. 44, q. 12.

This claim, while similar in some respects to the previous one, is somewhat broader in its terms. One element of the combination is: "An extensible means for driving the rake." What such means is, in the present case has already been made to appear. *As means for such purpose*, Appellant's and Appellees' devices are substantially the same. The substantial identity of other devices named in the claim has already been considered. Eliot makes a weak denial of in-

fringement, but assigns no new reasons. Comparison of the models will show that every element of the claim is found in Appellees' machine, without any change material to the performance of its function.

Appellant's Reissue, No. 2,490.

As already stated, the original of this patent was granted November 3rd, 1863. The reissue is dated February 19th, 1867. Record, p. 73.

In making the improvements now in controversy, the Appellant had to encounter and overcome, not only the difficulty of carrying and operating the rakes on the grain platform, while the latter was continually varying its position with reference to the main frame, but he also had, in addition to this, to mount, adjust and operate the rakes so that, in their movement over or past the main frame, they should take a line of travel which would permit the driver to ride on the machine. This is one of the main features of novelty in the Reissue No. 2,490. While this feature of construction proved to be an important one, it was not, through some inadvertence which the record does not disclose, specifically claimed in the original patent.

July 24th, 1864, the Commissioner of Patents addressed a letter to the Appellant, as follows (Record, p. 15:)

"Application has been made to this office for a patent for an alleged improvement in harvesters, *which is shown but not claimed* in the patent granted to you November 3rd, 1863. The claim of said application is in the following words, viz:

'The combination is a two-wheeled hinge joint machine, of a driver's seat mounted upon the main frame, with a raking mechanism mounted upon the finger beam and rotating on a vertical axis, or one nearly so, substantially in the manner

described; for the purpose of enabling the driver to ride upon the machine while the rake is in operation.'

"If you wish to contest the question of priority of said invention, it will be necessary for you to file an application presenting said claim within two months from this date; otherwise, said application shall be considered without reference to your patent aforesaid."

It further appears, from the record, that the party who filed this application was one Adam R. Reese, one of the most willing witnesses in this case on the part of the defence.

The Appellant being thus officially called on by the proper department of the government to assert his rights to this feature of the invention, filed the application for reissue, which resulted in the present patent, No. 2,490. An interference was declared with Reese, testimony was taken, and the Appellant was declared by every authority or tribunal before which the case came or could come, to be the first and original inventor. Such a vigorous contest was made to secure the exclusive right to this improvement, that it was finally appealed to the Supreme Court of the District of Columbia, the highest Court to which it could go, and came on for hearing before his Honor, Chief Justice Cartter, who unhesitatingly awarded the patent to the Appellant.

A stronger case could not well be made in support of the Appellant's right to such feature of invention. By the adjudication of the lowest and highest tribuuals before whom such a question could at that time lawfully come, and by all intermediate tribunals, it was then established, in the face of a strong opposition:

1st. That such feature of invention was new, useful and patentable.

2nd. That it was contained in the Appellant's original Patent; and

3rd. That the Appellant was the first and original inventor.

As against the first and second of such conclusions, the Appellees have nothing to offer except the opinions of their professional expert, Eliot.

If, as we believe, the adjudication of a Court of competent jurisdiction as to a matter of fact properly before it, is of more weight than the opinion of a professional witness, on the same evidence, then we may assume it as settled, for the present case, that the invention now in controversy *was* contained in the original patent of November 3rd, 1863; a necessary legal conclusion of which is, that it was proper to claim it in the reissue. This being clear, it remains only to consider the question of.

INFRINGEMENT OF 2,490.

FIRST CLAIM:

This claim has already been given in full, in stating the interference issue between the Appellant and Reese. A comparison of it with Appellees' model, will show clearly and conclusively that every element of the claim is present in the model, and combined in the same manner, to produce the same result.

Renwick: Record, p. 45, q. 13.

The infringement of the ninth claim may be disposed of now, and in the same way. The claim is as follows:

"The combination of a quadrant platform hinged finger beam, revolving rake, and a driver's seat supported by the main frame."

This claim, like the first, is found in Appellees' model, with substantial identity as to every material element.

But this patent contains other features of importance in the practical operation of harvesters; and of such features, Appellees have appropriated the combinations recited in the second, sixth and seventh claims.

These claims read as follows:

"2. The combination in a two-wheeled hinged joint machine, of a shoe with a hinged joint in it, with a rake and platform, having an extension J, and with a draft frame, which sustains the weight of the cutting apparatus, and raking apparatus, with platform attached at a point between the two drive wheels."

"6. I claim driving a revolving rake or a combined revolving rake and reel, which move about a vertical, or nearly vertical axis, by a device arranged on the grain side of the inner drive wheel, or inner side of the draft frame."

"7. Making a direct driving connection between a revolving rake, or a combined rake and reel, which move about a vertical or nearly vertical axis, and the inner end of the main frame axle of the draft frame."

The characteristic features of the second claim above quoted, cannot be better stated than in the language of Mr. Renwick, Record, p. 47.

"The combination of said devices is not every combination of them, but is that combination of them which is characterized by the peculiarities that *the hinged joint is in the shoe;* that the rake, platform and cutting apparatus are all attached or connected with each other, so as to move together upon the hinged joint; and that the extension device or arm is so arranged that it may be connected with the draft frame at a point between the two drive wheels, so that the draft frame sustains at this point the weight of the cutting apparatus and raking apparatus, with the platform attached."

Comparison of the claim with Appellees' model, will, as before, render the fact of infringement clearer than words can make it.

The sixth claim, as compared with the prior patent, No. 2,224, calls for the transference of the mechanism which drives the rakes and beaters, from between the drive wheels

to the inner side of the inner wheel. The utility of this is obvious. The extensible band used by the Appellees, was at the date of Appellant's Patent, a known mechanical equivalent of an extensible shaft (Renwick, Record, pp. 49, 50;) and under the doctrine of mechanical equivalents laid down in *Gold vs. Rees*, 15 Wallace, 187, Appellees must be held as infringers.

The seventh claim differs from the sixth chiefly in requiring that the mechanism which drives the rakes and beaters, shall take its motion from the inner end of the main axle. The two claims are so nearly allied in substance, that a separate discussion seems unnecessary. The Appellees' machine is an infringement of both claims, first, in making the driving connection referred to, inside the inner drive wheel; and second, in making such connection with the inner end of the main axle.

In concluding this branch of the case, we cite the *Union Paper Bag Machine Co. vs. Murphy.* Mr. Justice Clifford, in rendering the decision of the Court, says:

"Except where form is of the essence of the invention, it has but little weight in the decision of such an issue, the correct rule being that in determining the question of infringement, the Court or jury, as the case may be, are not to judge about similarities or differences by the names of things, but are to look at the machines or their several devices or elements, in the light of what they do, or what office or function they perform, and how they perform it, and to find that one thing is substantially the same as another, if it performs substantially the same function in substantially the same way to obtain the same result, always bearing in mind that devices in a patented machine, are different in the sense of the patent law when they perform different functions, or in a different way, or produce a substantially different result."

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"Nor is it safe to give much heed to the fact, that, the corresponding device in two machines, organized to accomplish the same result, is different in shape or form, the one

from the other, as it is necessary in every such investigation to look at the mode of operation, or the way the device works, and at the result as well as the means by which the result is attained."

"Inquiries of this kind are often attended with difficulty; but if special attention is given to such portions of a given device as really do the work, so as not to give undue importance to other parts of the same, which are only used as a convenient mode of constructing the entire device, the difficulty attending the investigation will be greatly diminished, if not entirely overcome."

Cahoon *vs.* Ring, 1 Cliff., 620.

"Authorities concur that the substantial equivalent of a thing, in the sense of the patent law, is the same as the thing itself, so that if two devices do the same work in substantially the same way, and accomplish substantially the same result, they are the same, even though they differ in name, form or shape."

Curt. on P., 4th Ed., sec. 310.

In addition to the defence in the Court below that required an examination of the patent and proof of the infringement, the originality of the invention was denied, and much oral and documentary evidence in this regard was produced on both sides. This it is now proposed to examine.

At the time of the Appellant's invention, there seems to have been two harvesters in use,—one of these was the Ball machine, which has been already described generally, and the other the Dorsey rake. The first of these inventions had a cutting apparatus hinged to a frame.

This Ball machine, to repeat, was upon two wheels, with a seat for a man who raked the grain from the platform as it fell there. (Appellant's proof, 75–76.) It had its cutting apparatus connected with the main frame by a drag bar, one end hinged to the front cross piece on the grain side,

and the other attached to the inner end of the cutting apparatus; with a stay bar hinged at one end to the inner end of the cutting apparatus, and at the other to the rear outer corner of the main frame. The inner shoe had a cross hinge to give it a rolling movement, so that the cutting apparatus had a flexible connection to accommodate it to the undulation of the ground, independent of the main frame. There was a platform attached to the rear of the cutting bar, which last was suspended at its inner end, by a chain to the grain side of the machine, outside of the inner wheel.

The Dorsey machine was a single wheel machine, the cutting bar and platform of which were rigidly connected to the main frame. (Record, p. 76.)

Here we have two machines, one without a self-raker, but with an undulating cutting apparatus; and the other with a self-raker, but with a cutting apparatus and raker, *both attached rigidly to the frame of the machine*, and without an undulating motion.

How then to combine the advantages of the Ball harvester with the Dorsey self-raker was the problem to be solved.

This was done by the Appellant, who placed the raking apparatus on a post securely attached at its foot to the inner corner of the cutting apparatus, with those undulations the rakes were thus made, necessarily, to conform as they swept over it, parallel thereto, and to the surface of the platform connected with it, and from which they were to remove the grain which the cutting apparatus deposited upon it.

We have already seen that the cutting apparatus of the Ball machine was suspended at its inner end from the main frame by a chain. This frame was outside the inner wheel of the machine, and if the inner wheel fell into a depression in the ground, the cutting apparatus and rake would be more disturbed and fall a greater distance than the inner wheel would fall.

To obviate this, the Appellant extended from the heel of his rake post, a strong arm towards the centre of the main frame, and suspended the end from the main frame by a link or chain, thus lessening the disturbance of the inner end of the finger beam and the rake post.

This will be understood by looking at Fig. 9, No. 2,224, where 2 is the arm referred to, sustained by the link f, from the frame at B, and whose vertical motion, and the corresponding motion of the heel of the rake post will be less than if the latter were suspended from a, in case the inner wheel should fall into a depression in the ground.

As shown in Fig. 9, the position of the link at B makes the vertical motion of the foot of the rake post *equal* to that motion of the inner wheel, though less than it would have been if suspended from *a*, as it must have been in the Ball machine. It might be less, however, as stated in the specification of 2,224, by removing it nearer the centre between the wheels, as shown in Patent No. 2,490, hereinafter mentioned.

The specification speaks of the suspension being either by a link or a chain, the chain allowing more vertical motion than the link; but which ever is used, a tilting motion due to the weight of the cutting apparatus is obviated in proportion as the point of suspension B, is placed nearer to the centre of the main frame between the wheels.

The cutting bar and platform being allowed to undulate, the head of the rake post must have a motion more or less irregular as the machine passes over uneven ground; so that the distance between the head of the rake post and the mechanism on the main frame which drives the machinery that regulates the movement of the rakes—must vary according to the character of the surface of the field to be reaped. This varying distance had to be provided for by a spring which took up the slack when a driving belt or chain was used, as in No. 2,224.

In this way, the Appellant added the advantages of the Dorsey revolving rake to the undulating finger beam and

platform of Ball; and the next inquiry is, the date of the invention patented May 20, 1862, No. 2,224.

In the latter part of September, or beginning of October, 1859, the Appellant got the sample of the Ball machine to which his rake was afterwards attached, (Record, p. 75,) and constructed thirty or forty which answered well as mowers; but the reel was a failure; *whereupon he made a change, locating the inner reel post on the drag bar.*

It was, at this time, that the popularity of the Dorsey machine, with a "self-rake," gave the Appellant the idea of attaching one to the Ball machine. (Record, p. 76, Int. 11.)

In the latter part of September, or beginning of October, 1859, Samuel Leonard, who then became the Appellant's agent for making sales, says, (p. 209,) "that he met the Appellant in Philadelphia, where there were reapers exhibited at a fair, and where the Appellant had a Ball reaper on exhibition—witness at least thinks it was a Ball—it was the Ball reaper that the Appellant wanted Leonard to sell. Witness looked around and saw the different kinds, and wanted to get a reaper to sell with a self-rake on, and Appellant told him that he was going to put one on, and showed me how he would attach it—that it would not be the same as the Dorsey rake on the machine—he said he was going to fix his behind on the cutting bar and platform, as the Ball reaper cut behind—*that no other reaper had a post on that place; and that would raise the rake clear of the man that would set on the machine to drive.* (p. 209.) *He said he was going to put back there, on the cutting bar and platform, the post for the rakes to work on.*" (p. 209.) Again, the same witness was asked, (p. 210, Int. 17,) "When you were talking with Mr. Hoffheins at the Philadelphia fair in 1859, did he indicate to you in any way what kind of a machine he was going to put his self-rake on? A. He shewed me on the Ball where he was going to put it, and I understood it

to be on the Ball, as I was going to sell that for him." p. 306.

Not satisfied, the Appellees' counsel pressed the witness, and fixes the date of the Appellant's description of the position of the post in 1859. See X-Int. 94, 98—and particularly X-Int. 51, p. 212, X-Int. 269, p. 331, in regard to the dates in this connstruction, and the witness' mode of fixing them.

The Appellant himself,—when he was examined as a witness,—says, that *the idea was perfected in his mind in the early part of* 1860, *he thinks earlier.* (p. 79, Int. 27.) He communicated to Samuel Leonard that "the only plan he ever could see to put a self-rake on a hinged bar machine, was to locate the rake on a platform, and drive it by a flexible mechanism." "My first idea," he says, "was to run it the same as my reel was run in my 1860 machine, and so constructed the first machine, but afterwards adopted the sliding tumbling shaft, as shewn in Appellant's Exhibit, 61. I recollect very well that I used to set *a nail keg on the inner front corner of the platform,* and used that as a post. I had nails drove in on the outside to form the segment now shown on the top of the reel post. I laid part of a broom handle, cut short, over the nail keg, in which I drove nails to form the circular segments now shewn on the cross shaft in Appellant's Exhibit, No. 61, thereby experimenting how to raise my rake out of the grain, after the gavel was discharged, to raise it and pass it over the machine to descend into the grain in front of the cutting bar." p. 79.

These experiments perfected the organization of the rakes, and made practical the idea which is of the essence of the Hoffheins Patent of 1862,—*the idea of the rake post on the cutting bar and platform, carrying on top of it the mechanism necessary to give the proper motion to the rakes.*

The *date* of these experiments now becomes important.—

The Appellant says (Int. 29,) I cannot fix a positive date. It must have been in the early part of 1860, probably in the latter part of 1859.

Now, the probabilities are in favor of the earlier date. In September or October, 1859, he had the Ball machine, and knew that Dorsey's single wheel rake was a popular one, and it was most natural that he should have his mind turned in the direction which it afterwards took.

But we are not left to conjecture in regard to the date of these "nail keg" experiments.

Leonard, then Appellant's agent for disposing of agricultural implements, writes to his employer, January 23rd, 1860, "Will your rake work well and whose patent is it, and whether it is easy to take off and put on, or whether you can regulate the size of the sheaf?" (p. 77.) On the 9th February, Leonard writes, "Now as regards your raker-off, they ask me if it will do well, and what is the lowest price for it." (p. 77.)

On the 19th May, 1860, Leonard writes to Appellant, "I think I did not mention to you anything about the self-rakers." "I want you to tell me whose patent your raker is, and how you are succeeding with it." (p. 77.)

On the 1st June, 1860, Leonard writes: "I want you to tell me when you make your self-raker, can you attach it to one of those reapers now made, easy or not?" (p. 77.)

On the 23rd June, 1860, he says; "I want you to send one; I can put the self-raker on afterwards if wanted, or suppose you would send a raker along."

Now it is clear that as early as September or October, 1859, the Complainant *had matured the idea of the position of the rake;* and that as early as January, 1860, certainly, he was at work arranging the rakes; and that Leonard so understood. On the 9th of February, he refers to it as Hoffheins' "raker-off," and on the 19th May, he calls it a "self-raker." (p. 77.)

Still the question may be asked, what description of rake is referred to in these letters, and in reply Hoffheins says: "I could not tell how much I described to Leonard, as I was not able to get the letters I wrote to Leonard; he didn't keep them; but I was fully satisfied that locating that post on the platform or finger beam was the plan I started out on to construct my rake." (pp. 79–80.) "It is the only plan I had at any time, before or after, or at that time. It was no trouble for me to get at that plan; the most trouble was, whether I should use a chain or shaft to run the rake."

The kind of rake that Appellant meant was fully made known to Leonard in the conversation in Philadelphia. Self-rakers were not new; the novelty of Appellant's idea was the placing of them on the top of the post resting on the cutter bar or platform.

The Appellant is uncontradicted here; and feeling the importance of shaking his testimony, which, with the letters and testimony of Leonard, carries back his invention, rakes and all, to January, 1860, if not earlier, the Appellees attempt to obviate its effect by cross-examination; and it is only necessary to refer to the cross-examination to see how wholly there was a failure in this particular.

Owen Dorsey had patented a self-raker located on the main frame of *a single wheel* machine; and on the 20th of August, 1860, the Appellant applied to know if he could obtain a shop right, (see Stabler's letter, pp. 100–101,) and had been refused; and, the object of the Appellees' cross-examination was to show that the plan of the Appellant's rake must have been subsequent to this—and we quote the cross-examination at length, to see how it benefited them.

X-Int. 161, p. 123. After your application above referred to had been refused, did you take any steps towards getting up a rake to use in connection with your Ball machine.

A. Yes, sir. *I had taken such steps before that.*

X-Int. 162. Why, then, did you make application for the Dorsey rake?

A. I suppose that was for the right of using a continuously revolving rake, as the Dorsey rake, in the form in which it was used by Flicklinger, could not have been attached to the Ball machine.

X-Int. 163. If you had any idea of getting up a rake prior to that time, why did you not proceed to do so, and not make application for the Dorsey rake?

A. *I did.*

X-Int. 164. Why did you want to use the Dorsey rake if you thought you could get up a rake of your own?

A. I don't know; my rake, at that time, probably, was not so fully developed; or, I may have thought, by using this revolving principle I might conflict with the Dorsey Patents.

☞ It must be borne in mind here that the only part of the Dorsey machine that could conflict with Hoffheins was the revolving rakes. They were attached to Dorsey's main frame, while Hoffheins' attachment of the rakes was independent of the main frame; so that really, all that was common between them was the revolving of the rakes.

X-Int. 165. You say, "my rake at that time probably was not so fully developed;" was it developed at all, and if so, to what extent?

A. It was developed so far that I was fully satisfied to put a rake on the Ball machine, it would have to be located on the platform. I found some difficulty in getting over the near wheel, and tried many experiments, one of them, as before related, the "nail keg" experiment, by having a nail-keg on the platform and trying how I could swing my rake over the wheel and get it properly in the grain.

X-Int. 166. Why didn't you put it on the Ball machine at that time if you were so well satisfied?

A. *I did shortly after*, and done all I could at that time between times, as I had no time to lose. I kept my own books, and done the greater part of my outside business, as I had no money to pay other persons to do it. I am satisfied

I would have been in the field a year earlier if I had not been cramped for money.

X-Int. 167. Why did you not put it on the Ball machine at that time, if you were so well satisfied?

A. As before stated, my experimenting was done between times, and I couldn't afford to take the hands away from work from which I expected to realize money that coming season.

X-Int. 168. If you had any idea of getting up a self-rake prior to your application to use the Dorsey, was it more than a mere idea existing in your mind?

A. *I think it was fully developed, or nearly so, for I carried it out afterwards.*

X-Int. 169. What do you mean when you say "fully developed?"

A. *I mean I had the idea fixed what I was going to do.*

X-Int. 170. Had you actually done anything?

A. Not any more than I have stated before. (See X-Int. 165.)

X-Int. 171. What enables you to say that you had even an idea of getting a self-rake prior to your application to use the Dorsey? [*Note.* This was a risky question after the examination-in-chief.]

A. *The letters in evidence here,* of correspondence between me and Mr. Leonard, *fixed the date for me.*

X-Int. 172. Please refer to any letters that shew you had any idea of getting up a self-rake entirely your own?

A. I have not got any letters. I wrote to him at that time; *but by the letters I received from him, I am fixing the date, and I know I was experimentiny at that time,* as he was very urgent and was very anxious for me to complete it before the harvest of 1860. [*Note.* See the dates of Leonard's letters—Counsel forgot that the only matter here was as to the *date*, not the *detail* of experiments.]

X-Int. 173. Refer to any letters, and the particular parts of the same, that shew you had any idea of getting up a self-rake entirely your own?

A. I cannot refer to any letter giving him a general description of the rake, *but am satisfied I was experimenting at the time.*

X-Int. 174. On the contrary, do not his letters to you shew that you never gave him any description or idea of a self-raker?

A. I do not find any description in any of them how the rake was constructed.

X-Int. 176. Was it not after the receipt of the letter received from Mr. Leonard, in 1860, excepting the one marked Appellant's Exhibit, No. 5, that you made application to make the Dorsey rake?

A. ☞ I *find four letters:* [Leonard's letters, January 23, 1860, February 9, 1860, May 19, 1860, June 1, 1860: Stabler's letter, was 9th mo., 17th September, 1860, p. 122,] *from Mr. Leonard before I received the letter from Mr. Stabler, in regard to the Dorsey rake. The latter one is Exhibit No.* 5.

X-Int. 179. You speak of a certain "nail keg" experiment, when was it you made that experiment?

A. That must have been in the winter of 1860, the beginning of that year.

X-Int. 180. What enables you to fix the date?

A. I know in the winter of 1861, the rake was so far completed as a machine, that it must have been the year before, because my experimenting was done at odd times.

X-Int. 181. Is that the only reason you can give?

A. That and the letter of Munn and Company, shewing me that my machine *was far enough finished in October,* 1860, *to take steps to get a patent.*

X-Int. 182. How do these letters from Munn and Company, in any way connect themselves with the "nail keg" experiment, as to enable you to fix the date by them? [*Note.* Counsel is fond of risky questions.]

A. I knew the "nail keg" experiment was during the winter, and I knew, in my own mind, that the letters from Munn and Company, are in *regard to getting a model fixed*

to get a patent, and "the nail keg" experiment was a considerable time before I took any steps in getting a patent.

X-Int. 183. Is that the only way in which you can fix the time when you made the "nail keg" experiment?

A. At present it is.

Then follows a cross-examination as to the details of the experiment, after which comes—

X-Int. 191. And this is all you remember doing prior to the fall of 1860?

A. *No!* I think I put a post up, and put a round board or something on the top in which I lengthened out my rake-arms considerable. The rake-arms then may have been three feet long. I found that I had to raise my post to get over the machine. I off and on did more experimenting, to what extent I cannot tell.

X-Int. 192. When was it you made the experiment just stated in your last answer?

A. It was later than the first experiment; I should think between that and the Spring of 1860, as during the reaper season I had not much time to experiment.

We have thus gone over the Appellant's testimony in regard to the date of the invention, far enough to establish beyond peradventure, that *in the early fall of* 1859, the Appellant had matured in his own mind the idea of placing the rake-post on the platform of a harvester, and in the early winter of 1860, was experimenting so as to perfect the contrivances by which the rakes were to be made to revolve from the head of the post in the desired manner. *The leading idea, the essence of the patent of May 20th*, 1862, *is this position of the rake-post on the platform; and we claim* that the title dates back to the Fall of 1859–60,—we fix this date thus specifically, because the letter of January 23rd, 1860, never would have been written, had not Leonard known that Appellant was experimenting; and with Ball's machine before him, and engaged in its manufacture from September

or October, 1859, it was the only machine to which his experiments could have pertained.

The law in this connection is well collected by Judge Blatchford in the *National Filtering Oil Company vs. The Arctic Oil Company*, 4 *Fisher*, 514, 524, 1871.

After going carefully over the facts the Judge says:

Certain well settled principles of law are applicable to the foregoing state of facts. In Adams *vs.* Edwards, 1 Fisher, 173, Judge Woodbury said: The law means by invention not maturity, it must be the idea struck out, the brilliant thought obtained, the great improvement in embryo. He must have that, but if he has that he may be for years improving it, maturing it. It may require half a life. But in that time he must have devoted himself to it as much as circumstances would allow. But the period when he strikes out the plan which he afterwards patents, *that* is the time of the invention, that is the time when the discovery occurs. In Colt *vs.* The Massachusetts Arms Company, 1 Fisher, 108, 120, Judge Woodbury said: "The date of the invention is the date of discovery of the principle involved, and the attempt to embody that in some machine, not the date of the perfecting of the instrument."

In Cox *vs.* Griggs, 2 Fisher, 174, 176, Judge Drummond says: It is the right and privilege of a party when an idea enters his mind in the essential form of invention, inasmuch as mere inventions are the result of experimental trial and effort, and few of them are worked out by mere will, to perfect by experiment, and reasonable diligence his original idea, so as not to be deprived of the fruits of his skill and labor by a prior patent, if he is the first inventor.

In White *vs.* Allen, 2 Fisher, 440, 446, Judge Clifford says, that he who invents first has the prior right, if as is prescribed in section 15 of the Patent Act, he is using reasonable diligence in adopting and perfecting the same within the meaning of that provision.

See also Sayles *vs.* Hapgood, 3 Fisher, 632.

Allen *vs.* Blunt, 2 Woodbury & Minot, 125.

That there was any want of due diligence in this case has not been alleged. The "nail keg" experiments were made in 1860. On the 12th October, 1860, he had applied to Munn and Company with a view to obtaining a patent. See Munn and Company's letter, on the 23rd February, 1861. Munn and Company make a favorable report, being unable to find any nearer approach to the invention than the Dorsey rake, p. 86, and by the harvest of 1861, he had furnished six or eight of the self-raking machines subsequently patented.

But it is said that the Appellant's improvement, which, as has been shewn, dates from September or October, 1859, is antedated by the Harvester rake of R. Brown, patented June 18th, 1861, the origin of which it is sought to carry back to an early date in 1860.

Before discussing the question of dates, it is necessary to determine whether the two improvements interfere.

Their independence is proved *prima facie* by the Appellant's Patent of May 20th, 1862, which, subsequent as it is to Brown's Patent of 1861, would not have been granted, had not the Patent Office held that there was no interference between them; a view that is strengthened by the Appellant's Reissue, when the question of originality again came up.

Let us make the comparison now.

Brown declares his improvement to consist in "an improved manner of mounting and attaching the rake and finger-bar," and his first claim is for "*securing both the finger-bar and the rake frame to a hollow shaft* L, the journals of which I run in bearings M in the main frame, and themselves constitute bearings for the journals, h, of the crank shaft."

Appellant's first claim is for "a sweep-rake, which is mounted on the heel of the finger-beam proper, or upon the inner front of the platform of a harvester, which has its cut-

ting apparatus and platform hinged to the draft frame substantially as set forth."

On the Brown machine, the foot of the rake-post is supported by *the main frame of the machine, and partakes of its movement*, whatever that may be.

In the Appellant's machine, the foot of the rake-post rests on the inner corner of the cutting bar proper, and *is distinct from the movement of the main frame;* and so far from being permanently attached to the main frame, it is merely suspended therefrom by a link or chain regulating its height above the ground.

The mechanism by which the rakes are made to revolve, is not involved in this litigation.

To preserve the parallelism of rakes and platform, all that the Appellant does, is to plant his rake-post at the inner corner of the platform.

While Brown resorts to the complicated contrivance of a sleeve on a rock-shaft, journaled on the main frame, and a part thereof, to which sleeve the foot of the rake-post is firmly attached.

Reduce both machines to mowers, by taking off their respective rake-posts, and there remains on the Appellant's machine nothing to show that it ever was anything but a mower—while there remains on the Brown machine, a complicated contrivance for no intelligible purpose, so far as mowing is concerned.

The Appellant's self-rakes may be taken from one, and attached to any other ordinary mower, which is a peculiar feature; while Brown's is a permanent part of the machine to which it is originally attached.

Even were Brown to antedate the Appellant, the latter's improvement would still be patentable, as a simpler, more economical and efficient mode of producing the same result, by means which cannot be regarded as equivalents—inasmuch as in the Appellant's machine, there being nothing to perform the functions of the sleeve and its attachments—the question of equivalents would not arise.

Nor is this all. In the Brown machine there is no hinge at the side of the main frame, while in Appellant's the inner heel of the cutting bar is hinged to the bar I, which, at its other end, is hinged to the far side of the main frame at d, making a double hinged machine of it.

Prior to Brown's improvement was Lindsay's, whose rake, attached to the centre of the main frame, had no contrivance to preserve the parallelism of the rake and platform.

Brown improved on Lindsay, by setting the rake-post, without changing its position, on the sleeve of the rock-shaft.

Ball, as we have seen, antedated Brown, (Dec. 1, 1857,) and had a double hinged machine. Discarding the double hinge, which the Appellant adopted, Brown went back to Lindsay, introduced his sleeve and its appurtenances, and when he took out his patent, made this sleeve the essential feature of his first claim.

While, therefore, both Brown and the Appellant, obtain the parellelism of the rake and the platform, they accomplish the object by different means which are not equivalents, and the two patents may well stand together.

The witness Eliot, who seems to be the witness of all work in this case, is made to testify at page 280 of Record, that Brown's improvement of 1861, is "an automatic raking apparatus, in which *the supports for the rake are mounted on the inner end of the finger-beam, or upon the sleeve,* by *which the finger-beam is connected with the main frame* of the machine, and in such a manner, that the quadrant shaped platform undulates over the surface of the ground."

The witness here assumes that Brown's inner end of the finger-beam, and the Appellant's heel of the finger-beam proper are the same.

But they are very different. Brown extends the beam that carries the cutters to the sleeve on the rock-shaft on the centre of the main frame, and calls it the finger-beam; while the Appellant terminates his finger-beam *outside* of

the main frame, and attaches his rake part to what he calls "*the heel of the finger-beam, proper,*" where there is the hinge the Brown wants, limiting his definition to the part that carries the cutters.

In a word, then, looking to the *facts* and not to the *words* used, the Brown rake-post is attached at the *centre* of the main frame, and the Appellant's at the *outside* of the main frame.

Eliot says that the parallelism between the rakes and cutter-beam "is accomplished by extending the inner end of the finger-beam beyond the inner shoe to the centre of the machine, and mounting it upon a sleeve or hollow shaft, which is supported on bearings upon the main frame of the machine."

But, it is this very extension of the inner end of the finger-beam beyond the inner shoe, which the Appellant has not; it is this very hollow shaft which the Appellant has not, and it is this very mounting of the heel of the rake-post upon a sleeve on a rock-shaft on the main frame, which is not to be found in the Appellant's improvement, that make the difference between the two inventions vital.

Assuming, however, that the question of priority as between the Brown's Patent of 1861, and the Appellant's of 1862, may arise, we must first see how the date of Brown's invention compares with the date of Appellant's, which we have already fixed.

Brown, in his testimony, Record p. 334, refers to three models, Nos. I, II and III. No. I is the Dorsey one-wheeled machine, built by Page, with a rigid cutting-bar, and the rake on the main frame. No. II is supposed to represent the Patent Office model of 1861, and the machine built by Brown in the fall of 1860. This cannot be, however, inasmuch as Brown proves that the machine built in 1860, had a wooden frame, *while the model has an iron frame,* and the drawing of the Brown Patent of 1861, represents the rake-

arms in one piece, while in the model they are hinged to the central shaft.

Referring to No. II, supposing that the iron model No. II, represents the wooden model, said to have been made in 1859–'60, Brown says, p. 125, "I made a rough model in the winter of 1859–'60. I completed a full size machine in September, 1860, and operated and exhibited it at the Maryland fair the same year. [This was the fair, no doubt, of October, 1860.] It was sold and used in the following harvest, (June, 1861,) and for several harvests afterwards."

Now, first, as to the actual date when the model on which the working wooden machine of 1860 was constructed, beyond the making of which model, Brown does not attempt to carry his invention. He says, "In the winter of 1859–'60."—But this is subsequently contradicted by him.

In his cross-examination, p. 313, Brown is asked, [cross-question 46,] with whom were you working when you built the first machine which you have mentioned in your examination-in-chief, which you say you made in 1860?

A. I was working with Calvin Page of Frederick City, Md.

X-Int. 41. Did you make any use of that machine in the field in the year 1860?

A. I didn't cut any grain with it. The grain harvest was cut when I got it completed. It was not used in the field in 1860.

X-Int. 42. You have heretofore taken some testimony to prove the date when you made the model for that machine, have you not?

A. I have taken testimony.

X-Int. 43. Did you not show by that testimony that the model for that machine was incomplete in August, 1860?

A. My testimony shows that the model sent to the Patent Office was not finished up to that time. It also shows that I had a model *as early as March or April*, 1860, as shown to other parties sufficient to show the plan and construction of the machine.

X-Int. 44. You have spoken in your testimony-in-chief of but *one* model for that first machine, have you not?

A. I have spoken of but *one model that I knew of* in the testimony. The model spoken of *here was the first model made to show the plan devised.*

X-Int. 45. Was the model sent to the Patent Office?

A. This model was *not* sent to the Patent Office.

We thus give accuracy to the loose expression, "the winter 1859–'60," by showing from Brown's own lips that his first model of the invention patented in 1861, was made in March or April, 1860, and farther back than this he cannot go.

But even this is further back than Brown is entitled to go. In his examination-in-chief, p. 133, he says that he showed this model confidentially to Owen Dorsey alone. "I did not make it a special thing to show it to any one; *after I had commenced the machine*, I did not pay much attention to the model."

Now, had this model been completed in March or April, and its merits fully disclosed and understood, Brown could readily have built his first wooden machine in time for the harvest of 1860. "It showed," he says, "the driving wheels, frame, rock-shaft, and the cutter-bar attachment showing the position of the raking attachment; that so far as I went with that model, it was satisfactory to me to go to work to make a large machine," p. 134, and the inference is a fair one, that as soon as he had progressed far enough with it, as to think that it would work well, he commenced the first machine of September, 1860, and this would give August, 1860, as the date of Brown's invention patented in 1861. Had he been so satisfied in March or April, 1860, there can be little question but that he would have had a machine at work in the harvest of 1860.

So much then, for the date to which Brown can carry back his invention patented in 1861; we fix it at August, 1860.

There was no reason why Brown's wooden machine should not have been built as soon as the model was sufficiently advanced, as he says, to authorize its construction.

Brown, as it appears from his testimony, had Calvin Page's establishment at his control, and Page ultimately built one machine, and went to work for Brown no doubt, as soon as Brown was ready for him, while Appellant in 1860, was struggling along without funds, and obliged to earn as he went along from day to day, the means to make experiments.

But, even if the Brown and the Appellant's inventions were antagonistic, and March or April, 1860, is the true date for the Brown invention, Brown is still antedated by the Appellant, who communicated to Leonard in September or October, 1859, the idea, that is of the essence of his patent, and which his "nail keg" experiments of January, 1860, perfected so far as to justify his constructing the working machine.

This argument presupposes that the Brown machine, represented by model No. II, interferes with the Appellant's Patent of 1861; *but it must not be forgotten that we deny most positively, for the reasons already given, that there is any such inference.* It is only necessary to compare model No. II, with the drawing accompanying the Appellant's specification to see the difference between them.

Admitting that the testimony of patentees in regard to the date of their first inventions, may be taken, yet it is with allowance, and requires to be corroborated. The Appellant is fully sustained by the testimony of Leonard, as to what took place in Philadelphia, and by the letters of January 23rd, 1860, February 9th, and May 19th, and by the letter of Munn & Co. of October 12th, 1860, while Brown is unsupported.

The most accurate piece of testimony offered by the Appellees touching the use of the Brown machine like model No. III, is at p. 344 of the Record, being the receipt of Samuel Miller to Calvin Page, for one improved frame two

wheel Dorsey self-raker and mower, $140—dated April 3, 1861, which worked in the harvest of that year—while Miller swears that he saw a similar machine at Page's in 1860, after the agricultural fair. The fairs are held, we know, in October; and how long after it was, that Miller saw the sample machine is not stated? It is probable, however, that he saw the machine which Brown, p. 311, says he completed, full size, in September, 1860, and exhibited at the Maryland fair in that year. This machine, however, was, Brown swears, (Int. 15, p. 311,) a wooden machine, while Miller's was an iron one, with a rear swinging frame, p. 126.

The first double frame machine was made in 1861, (see p. 163, Int. 1.) But that Miller saw, in 1860, the machine patented in 1863, cannot well be believed. Had there been the double frame then in existence it would have certainly been described in the patent of 1861. Nor does the testimony of Eliot, that no ingenuity was required (see p. 284, Appellees' proof) to transfer the rake apparatus of the 1861 patent to the double frame of 1863, help the case.

Now, the Appellant had six or eight of his machines in the harvest of 1861,—Record, p. 80—"the first quadrant platform," he says "to the best of my recollection, was built in the harvest or right after the harvest of 1860, and from this time on I devoted such time as I could spare in making drawings, sketches and explanations to some of the shop hands and others; but to the best of my recollection the first machine that was completed or nearly completed, was the beginning of 1861." Record, p. 80.

This is corroborated by the Appellant's letter to Leonard dated February 22nd, 1861—in which he says I think I have the best and *simplest rake in use.* I can sell a machine for almost the same price with a rake, as I sold them last year. p. 81.

On the 28th February, Leonard writes to him I want you to tell me *whose the patent rake is,* and I want you to make it as soon as possible. p. 81.

On the 9th April, Leonard writes again: "State to me what day you will be up at the Court in Mifflin *with your machine.*" p. 81.

On the 15th April, 1861, the Appellant writes to Leonard, I have but two *finished with rakes* on—and the one was sent to Cumberland. Record, p. 82.

On the 28th May, the Appellant writes, "we are going to cut green rye with our rake—and on the 8th June, he tells Leonard that they had the rake on green rye, and that it worked all right." p. 83.

In further corroboration of the Appellant, we have the testimony of Israel Boyer, p. 129; "that in May, 1861, he saw a combined machine adapted to both mowing and reaping in the Appellant's shop at Dover, with the rake post located on the platform."

To the same effect is the testimony of William Y. Link, p. 132, who swears he saw the machine with the rake put on the platform, about June, 1861, and he fixes the date by reference to the battle of Gettysburg. There is a good deal of impatient cross-examination of this witness.

So Jacob B. Fink, p. 204, says he saw the machine completed about the latter part of May or beginning of June, 1861. A somewhat persecuting cross-examination, elicits the fact that Fink, like Link, saw parts of the *machine in question in October*, 1860, when the Appellant was working at patterns for it. Fink also settles the question, that it was the machine that was used in green rye in the latter part of May, 1861. p. 161.

Robert Naylor, p. 201, proves that he drove the machine, seated on it on July 5, 1861.

Israel Heilman, p. 201, says he bought a machine with a self-raker and post on platform from the Appellant along about 1861. Jacob Glatfelter, p. 202, says the same. Michael Link, p. 205, swears that he saw the machine in the shop in the last of March or beginning of April, 1861, and saw it at work in June, 1861. John Flory, p. 205, saw the machine in 1861—and Samuel Leonard, p. 209, says that Appellant sent him a machine to sell for the harvest of 1861.

Date of Actual Operation.

A word or two now as respects the dates when the machines of Brown and the Appellant were *put to work* in the harvest field.

Brown, himself, after swearing that the wooden machine No. II, was engaged in the harvest of 1861, was, upon cross-examination forced to admit, that, of his own knowledge. he don't know "that this machine was ever used in the harvest field." Record, p. 315.

After describing, p. 311, his first or wooden machine, Brown was asked,

Int. 18th. Were machines such as you described, or like it, built, and if so, to what extent?

A. "There was but *one* made with a wooden frame—they were changed to a metal frame.* The frame was made in two parts, and the axis of the driving wheels being secured to the front part; the rear frame hinged on the cross-shafts extending backwards far enough to receive the rock shaft, it being hinged in the rear frame. The cutter-bar and raking apparatus was attached to it, and formed the hinge of the cutting and raking apparatus; the rear frame was suspended by a chain to a brace secured to the front frame." "I think there was about ten of the last machine made in 1861, and up to the harvest of 1862, there was about forty of them made." That there could be no doubt about these 40 machines, the witness produced No. III model, which was afterwards superseded by the production of the Miller machine.

Brown's testimony as to the working of this No. III, in the harvest field is, at pp. 316, 317, 318, and although he

*It must be understood here that Brown in speaking of the change from wood to iron has reference to double frame iron machine, such as was sold to Miller,—the wooden machine being the only single frame machine made of wood.

speaks of one Thomas having one in 1861, he is very uncertain, and admits that he saw none of the others at work in the field prior to 1862.

Thus far, then, the scope of the argument is, that in September or October, 1859, the Appellant had the idea of his invention perfected, when he was able to indicate to Leonard, the position of the rake post on the platform of the Ball machine; that in January, 1860, he, by his "nail-keg" experiments, was arranging the mode of managing his revolving rakes, and was corresponding with Leonard, looking to the sale of the improved combined harvester and mower; and on the 20th October, was writing to Munn and Company, with a view to securing a patent; that in the harvest, or right after the harvest of 1860, he was devoting his time to the matter, (writing also to Munn and Company,) and that the first operative machine was completed, or nearly completed in the beginning of 1861—and in May or June, 1861, the Appellant was sending one of two that he had made to his agent for sale. (p. 309.)

On the other hand, Brown, whose machine is the atagonistic one here, had his rough model of the 1861 patent, supposed to be made in August, 1860—in the harvest of 1861, along with the Appellant's.

But it must be borne in mind, as most important here, that the wooden machine of 1860 *was not the machine that went into the harvest field.*

This was the *double*, or hinge frame machine, of the actual date of whose invention we have no proof that reaches further back than the Miller receipt.—That the wooden machine ever worked in the harvest field there is no evidence.

Nor must we forget that of the wooden model we have no proof beyond Brown's own testimony.—He says, to account for its non-production; that it was burnt up in his tool chest! p. 316.

Even admitting then the two inventions interfere with each other, which is again denied, neither can claim any advantage over the other, because of their practical use in the harvest field; so that the question between the Appellant and Brown now at issue has to be determined by going back to the origin of the idea;—and here it is believed, that there can be no doubt that the Appellant was the first in the field of competition.

We have already seen that Brown's second Patent makes no mention of a self-raker, and that although such a contrivance is in his patent of 1861, *his only claim is to the sleeve and its attachments.* The patent of 1863 makes no mention of a self-raker, but confines its claim to the description or construction of the double frame.

It not easy to understand the reasoning of the witness Eliot in this connection. He says that in his "opinion no invention would be necessary to transfer the raking apparatus of the machine represented in Brown's Patent of 1861, to that represented in the Brown Patent of 1863."

If he means that, inasmuch as it was the machine described in the patent of 1863 that was used in the harvest of 1861, therefore the patent of 1861 is to be construed as though it was identical with that of 1863, and that the latter in this litigation ought to date back to March or April, 1860, with all possible respect to Mr. Eliot, his opinion is an absurd one.

The Miller receipt of April 3rd, 1861, is the date to which Brown is authorized to carry his invention, and the production of the Miller receipt obviates the necessity of going over a great deal of the evidence of the Appellees.

The patent of 1863 made the machine which was, in the patent of 1861, a single hinge one, a double hinged machine, which the machine of the Appellant built upon Ball, was from the beginning.

It is clear that there can be no antagonism between Brown's Patent of 1861, which describes a machine without the undulatory motion which is found in the Ball and the Appellant's machine, and the Appellant's Patent of 1862. When the patent of Brown of 1863 was obtained, Hoffhein's Patent was an earlier one, entitled to precedence as such. See Cox *vs.* Griggs, 2 Fisher, 4.

Other Defences.

McClintock Young's machine:

The McClintock Young machine, may be disposed of at once, by referring to the file wrapper, where his affidavit, dated April 5, 1861, was filed in the Patent Office, May 20, 1861, which relieves us from the necessity of a detailed examination of the features of the machine. There is no testimony to give to this invention an earlier date; nor is there any evidence to show that the machine was ever reduced to practice, or put to work in the harvest field.

It may be said, however, that it is only necessary to look at the drawings of this machine which have been offered in evidence to see the utter dissimilarity between it and the invention of the Appellant.

Whitenack's machine:

Brakely swears, that he saw a machine, as is shown by a model, at work in 1860, harvesting oats—say in August. No patent was taken out for it; and after its first and only appearance, it disappears as a harvester, and when it again comes to life, it is a mower only. There was a second machine, like the first, with *the exception of the rake.* This, however, was a single wheel machine, and was abandoned, and a Dorsey rake procured. *Like the Young machine it is clearly antedated by the Appellant,* even admitting that it was antagonistic, which is denied. John Melick proves it worked three or four days, when it disappeared.

The Reese machine:

Adam R. Reese, proves the photograph, (Exh. Lewis C. Reese,) which was put in the harvest field in the summer of 1860—with a seat for the driver.

He also proves the photograph, (Exhibit, Adam Reese,) which had been constructed at Phillipsburg, N. J.—and the invention of which was explained to Andrew Aten, by drawings on pieces of board, in pencil and chalk, in October or November, 1860, (which the Appellant clearly antedates,) *but not constructed until* 1863. It had a driver's seat. In the Lewis C. Reese machine, the rake was mounted on the main frame.

Now both of the Reese machines are subsequent to the Appellant's.

The Beans machine.

A witness, Sliker, is then produced, who testifies that Reese, Melick and Company built ten of the Whitenack machines in 1861, previous to which a machine like the model Whitenack had been tried on Melick's farm, with a driver's seat—which the witness saw in the spring of 1860—and he swears further, that he saw a similar rake being used on the Beans machine, with a single wheel, in the harvest of 1861—the *platform being rigidly attached to the main frame.* Witness then says that he saw the Reese rake on a Beans machine, sold to Stackhouse, in 1862, p. 329.

This testimony clearly does not effect the Appellant. The Beans machine of 1861, (antedated by the Appellant,) had the platform *rigidly* attached to the single wheel main frame, p. 330, and the Stackhouse machine of 1862, whatever its construction, is ruled out by the witness, when he fixes its date at 1862.

Andrew Aten is the witness for whom Adam Reese made his pencil and chalk drawings on pieces of board, in *the fall of* 1860, locating the rake on the cutter bar—and he proves that in the spring of 1863, they commenced building a full sized machine with a seat, finishing it July 17, 1863.

Stackhouse, for whom the Beans machine was built, was examined, p. 337,—and testified that he got the Beans machine in 1862, with a driver's seat on the machine. He proves a model made by Sliker. Stackhouse fixes the date 1862, by saying it was the second year after the war—which would make it 1863; but whether 1862 or 1863, the machine is antedated, even admitting it was a similar machine to the Appellants.

Sliker is re-called to prove the model made of the Stackhouse machine, when it appears, that in the Whitenack machine, the rake was located on the frame of the machine, while on the Stackhouse it was on the finger-bar.

This testimony would have disposed effectually of the Whitenack machine, even if it had not otherwise fallen out of the case.

While Sliker was again on the stand, it was thought well to help the Stackhouse model, and so the witness is got to say that in the harvest of 1861, Mr. Beans told him, (which is not evidence,) that he was building a machine with the rake on the finger-beam. He tries to make it appear that Beans was building hinge bar machines in 1860, but thinks it might have been 1861, and is not positive, though he built none after the Stackhouse, because of the expense of the head of the rake-post, letting whatever his invention was, die out. Nothing, however, here affects Appellant's date of the fall of 1859, and experiments of January, 1860, and the Leonard and Munn correspondence of that year.

It will be noticed here, that Sliker, Reese and Melick were all interested in a firm, manufacturing agricultural implements, and all natural antagonists to the Appellant. That Brown is in the same category of natural opponents is equally apparent; and were it necessary, the bias of such witnesses might be relied on as affecting the weight of their testimony.

In the above remarks, the oral testimony of the Appellees in connection with supposed antecedent inventions, has been

examined. Numerous patents, however, have been made part of the defence, which have been left to speak for themselves, through the mouth of the witness Eliot—that is to say, Underhay, (English,) April 27th, 1853; Palmer & Williams, January 24, 1854; Owen Dorsey, March 4, 1856; John P. Manny, July 14, 1857; Willard & Ross, November 3rd, 1857; Ball & Butter, December 1, 1857; C. P. Gromberg, June 28th, 1859; Stephen A. Lindsay, August 2, 1859; same, dated December 11, 1860; Aultman & Co., July 5, 1859; Lewis Miller, December 3rd, 1861; Isaac C. Twining, August 14, 1860; McClintock Young, July 9th, 1861; Robert Brown, June 18, 1861; same, October 27, 1863. Some of these have been already noticed—but they are all, it is submitted, disposed of by Eliot himself on cross-examination. He is asked at page 293 of Record, X-Int. 123.

"Please state in which of the Exhibits referred to by you, in your examination-in-chief, if any, you find substantially the same combinations of devices which are recited in the 1st, 8th, 9th, 11th, 12th, 14th, 16th and 19th of the Appellees' Re-issue No. 2,224, or any of them so shown or described, as to anticipate or invalidate those claims, or any of them, and specify which of the claims, if any, is so anticipated in any one or more of said Exhibits?"

A. "Without again referring in detail to the several claims mentioned in the question, and as I now understand the subject, I can say that if the said claims be construed to cover the combinations or devices, [as if they could be construed to cover anything else,] substantially as described in the said re-issued patent, *then I do not find in any of the said exhibits what I regard as substantially the same combinations as specified in the several claims as mentioned in the question!!*"

And the witness then makes the same answer when applied to the 1st, 2nd, 6th, 7th and 9th claims of the Appellant's re-issue of 2,490!

Not less than fifty-two out of the one hundred and ninety-seven pages of the Appellees' proofs are thus summarily disposed of by the Appellees' own witness.

It might well be asked, therefore, why these fifty-two pages were permitted by the distinguished counsel for the defence to lumber the Record. There can be but one answer, which is, that it was desired to satisfy the Court, that between and including the patents of Underhay and Brown, covering a period of ten years, so much had been done in perfecting the harvesting machine, that nothing entitled to a patent had been left to be affected by the Appellant—in other words, that his patents 2,224 and 2,490 were void for want of originality.

The reply to this is found, however, in the testimony of the witness Eliot, who proves the originality of the Appellant, whose patents are for combinations, when he says, that in all that has been exhibited against him *there is no combination that is substantially the same.*

The Appellees' argument is a very old one, and has again and again been answered by the decisions of the Courts. It is not the complication, or apparent magnitude, so to speak, of an invention, that makes it patentable, but the object that is effected by it, however simple. Upon this point it is not necessary to multiply authorities. No simpler invention was ever made or sustained than that which came before the Supreme Court in McClurg *vs.* Kingsland, 10 Howard, which may be taken as a type of a class whose merit, as here, was its great simplicity, being nothing more than changing the direction from radial to tangential, of the channel through which the molten stream flowed into the cylinder pattern for a cast-iron roll.

The Appellant had, in the eye of the law, all the material afforded by prior invention, before him in 1859; and when with the right to use the Ball harvester, with its undulatory characteristic at hand, he described to Leonard, where he would place the rake-post to carry the continuously revolving rakes of Dorsey—he did what it had never occurred

to Ball to do, with all the suggestions afforded him by his own machine, nor to Dorsey, who had before him the exigencies of the undulatory surface on which the machine was to do its work; and the Appellant was to all intents and purposes, as much an original inventor, as any one of those who preceded him in any branch of human ingenuity. If in perfecting his invention, he made use of what had been done by others, taking a part from one, or adopting one element from another, the result, so far as his merit as an inventor goes, was the same—no matter how many elements he combined. If, as proved by Eliot, he was the first who made the combination, he was, in the eye of the law, a first and original inventor.

"When a patent is for a combination, it is immaterial whether the patentee is the inventor of any of the elements or ingredients; they may all be old, and yet, if the patentee was the first to combine them for the particular purpose, he is entitled to be protected for that improvement." Curtis on Patents, 111, and the cases cited in Bump's Law of Patents, 54.

APPELLANT'S PATENT OF NOVEMBER 3, 1863, No. 2,490.

The same remarks apply to this patent, in connection with the patents that have been offered in evidence. Not one of them as proved by Eliot, contains the combinations described and claimed in the reissued patents, nor does the oral testimony of the unpatented inventions better the defence.

The claims of No. 2,490, are so clearly stated in the testimony of Henry Renwick, at page 45 of his testimony, Q. 13, and what follows, to page 47, that it is not necessary to do more here than to refer to what he says upon the subject. In showing where the Appellees infringe the claims of 2,490, 1st, 2nd, 6th, 7th and 9th, he has analyzed the claims, so as

the better to show that all their elements are contained in the machine of the Appellees, on which suit is brought.

The Appellant did not claim the seat as his invention, but such an arrangement or combination of parts of which the seat was one, as would permit a seat to be on the machine without risk to the driver.

Here, as in connection with 2,224, the date of the Appellant's invention becomes important.

Date of invention of 2,490.

We have already fixed the date of the invention in No. 2,224, involving the position of the rake-post, and it now remains to be seen when the seat made its appearance as an element of a combination, which existed independent of it.

The Appellant, at p. 76, states that his first self-raking reaper "was tried in green rye in William Lenharts' field, as near as I can recollect, in the beginning of June, 1861." And at p. 76, he says, "I placed a seat on the front right-hand corner of the main frame. This was a left-hand machine, the rake passed over the driver's head, and the driver had plenty of room to ride on the machine without being struck by the rake."

Boyer, p. 122, saw a combined machine from the Appellant, in May, 1861, which had a driver's seat on the right front of the main frame, on which a man could "sit and drive without being struck by the rake or rakeheads as they came over." p. 122. The witness, 5 feet 11¼ inches high, sat on it himself, with his hat on, while the Appellant revolved the rakes.

Link, X-Int. 30, proves that the machine "had a seat for the driver on the front part of the machine." A most interminable cross-examination fails to shake this testimony; even the suggestion, (X-Int. 210,) that the seat was a piece

extending from the frame, which the witness replies to, by insisting that it was on the main frame.

Jacob B. Fink, Int. 29, proves that there was a seat for the driver on the Appellant's machine on the hand side of the main frame, in front (referring to model 61.) This witness saw the 1861 machine in Hoffheins' shop, with a man seated on the front corner seat of the old 1861 machines, while the rake and beaters were revolved without striking his head, Int. 360–363. Pressed, on X-Exam., Int. 397, 411, it turned out that the witness himself sat on the machine while the rakes were being revolved in Hoffheins' shop. That this witness annoyed counsel may be inferred from the fact that his X-Exam. occupies 50 pages.

Eisenhart's testimony, Int. 7, is to the same effect, having with others seen the rakes revolved while a man sat on the driver's seat.

This is the machine sold to Shireman, and by him sold to Shellenberger, having been previously altered in such a manner as to exclude the driver.

Naylor, Int. 4–7, testifies that in the harvest of July 5th, 1861, he sat on the seat on the front out corner, and drove the two horses while the machine was reaping three or four acres of wheat.

Glatfelter, Int. 10, swears to the seat on the outer front of the machine in 1861, and that the driver could set there handy, and that Hoffheins sat there the first round.

Michael Link, Int. 10, saw the machine at work in June, 1861, in green rye, and that the driver sat on the machine and drove the horses.

Bell, Int. 10, testifies to the seat on the Hoffheins machine and says, there was ample room for an ordinary sized man to set on the front seat and drive while cutting grain without being struck by the rakes. And Samuel Leonard's testimony in regard to the 1861 machine is to the same effect. The rake passed over the driver entirely. See X-Int. 165.

The above testimony is conclusive as to the positive practicability of the seat in May or June, 1861, and the question remains, how far back can Appellant go to fix the date of his invention in this respect; and here the testimony of Samuel Leonard is equally conclusive.

It seems that when Leonard and the Appellant met at the fair in Philadelphia in 1859, there was a reference to a reaper called the Jersey Blue, to which the Dorsey revolving rake could not be attached without the rakes hitting and knocking the driver off—when Hoffheins told Leonard, as it was brought out on X-Exam., p. 211, that with his, H's plan, the driver could set on the machine; see X-Int., p. 212. He also said he would "get up one to work, a reaper, so that it would not run to come in contact with the driver, like Dorsey's," and again that the seat would be forward. p. 212.

The testimony of Leonard therefore carries the combination of which the driver seat is an element in No. 2,490, back to September or October, 1859, and the same argument that applies to 2,224, applies here. Nor, in all the testimony that has been offered by the Appellees is there any that antedates the combination that this patent covers; for even admitting that a seat may have been upon a harvester prior to 1859, there is not a particle of proof to show that it was in the combination in question. Brown, the leading witness of the defence, is antedated in regard to the seat as well as in connection with the rake post.

The Reissues.

The patent granted May 20th, 1862, was reissued May 20th, 1866, four years afterwards,—and the patent of November 3rd, 1863, was reissued February 19th, 1867, three years, three months and a half afterwards.

Both reissues were under the Act of Congress of July 4, 1836, ch. 13, which, as regards the present question, is as follows:

"That whenever any patent which has heretofore been granted shall be inoperative or invalid by reason of a defective or insufficient description or specification, or by reason of the patentee claiming in his specification more than he had, or shall have, a right to claim as new, if the error has arisen by inadvertence, accident, or mistake, and without any fraudulent or deceptive intention, it shall be lawful for the Commissioner, upon the surrender to him of such patent, and the further payment of fifteen dollars, to cause a new patent to be issued for the same invention for the residue of the period then unexpired for which the original patent was granted, in accordance with the patentee's corrected description and specification."

Under this law, a practice in the Patent Office grew up, which, disregarding the date of the original patent, its amplitude, or the number of the claims, confined the Commissioner to the single enquiry—whether the proposed reissue was for the same invention that had been originally patented.

A leading case in this connection, illustrating the practice of the Patent Office, is the case of Wilson *vs.* Rousseau, 4 Howard, 446. Here, the original patent, dated May 27th, 1828, had been extended at the expiration of the first term, and was reissued during the extension on the 8th July, 1845—after an interval of 17 years.

The original specification fills little more than a single page of Howard, and there are but two claims—the application of cutter wheels to planing, and cutter wheels to tonguing and grooving—there was a claim, too, for circular saws for reducing the width of the boards.

The amended specification occupies upwards of four pages of Howard, and instead of only two claims—the cutter wheels in their double application to planing and tonguing

and grooving,—there is claimed the employment of rotating planes in combination with rollers, to prevent the boards being drawn up, &c.—also the combination of the rotating planes for planing with the cutter wheels for tonguing and grooving at one operation—also the cutter wheels for tonguing and grooving [omitting planing] at one operation—also the combination of the planes, or the cutters, with the pressure rollers.

In the original specification nothing is said of these combinations; and pressure rollers, which are of the very essence of this great invention, make their appearance as a claim for the first time in the reissue. All the combinations, as well as the rollers were, however, exhibited in the model; and this not only justified, as the law of 1836 was then construed, but, required the reissue which has stood the test of the litigation, that, year after year, was directed against the Woodworth planing machine in almost every circuit in the United States.

It is unnecessary to multiply references in regard to the practice in this connection. The time when an error was discovered, however, was not in any of them made a question. In the case of Poppenhausen *vs.* Falk, in 2 Fisher, 221, decided in 1861, where the decision was concurred in by Mr. Justice Nelson,—the Circuit Judge says, "It not unfrequently happens that a judicial interpretation of the specification, or claim, of a patent, or both, discloses to the inventor and patentee for the first time the defect in the instrument, and shows that he has unwittingly restricted his rights within narrower limits than his discovery, or so inartificially described his invention, that he has failed to secure any substantial advantage from it. Such a disclosure furnishes a proper occasion for a surrender and reissue, and is clearly within the beneficient design of the statute."

So, in the case of Blake *vs.* Stafford, 6 Blatchford, 195, decided in 1867, p. 299, in construing the Act of 1836, as regards reissues, the Court says, that "The privilege of sur-

render and reissue is invaluable to inventors, and it holds what is not understood, nor, to be controverted that the decision of the Commissioner is final and conclusive unless impeached for fraud in his, or the patentee's, acts, or some irregularity arising on the face of the papers, or a clear *repugnance between the original and reissued patents* to be conclusive."

In the leading case of Burr *vs.* Duryee, 1 Wallace, 531, decided in 1861, the original patent was granted April 25th, 1846, and not reissued until 1856, ten years afterwards. Nothing was said here in the elaborate discussion of this case by the counsel or the Court, of the time elapsing between the original and the reissued patent, as affecting the validity of the latter; although perhaps there is no case in the books in which reissues generally are treated with less ceremony than by the Judge who delivered the opinion of the Court in that case.

The effect of Burr *vs.* Duryee, however, was to call the attention to the subject of reissues. This was done authoritatively in the case of Seymour *vs.* Osborne, 11 Wallace, 517, decided in 1870, upon a patent granted July 8th, 1851, and reissued July 10th, 1860, nine years afterwards, under the Act of 1836. The Court say, p. 544:

"Power is unquestionably conferred upon the Commissioner to allow the specification to be amended if the patent is inoperative or invalid, and in that event to issue the patent in proper form; and he may doubtless under that authority allow the patentee to re-describe his invention, and to include in the description and claims of the patent not only what was well described before, but whatever was suggested or substantially indicated in the specification and drawings, which properly belonged to the invention as already made and perfected."

The reissues involved in the present litigation were subsequent to the decision in Burr *vs.* Duryee, and followed the

practice sanctioned by the case of *Wilson vs. Rousseau*, and adopted in the numerous cases in the different Courts where reissues were considered. The decision in the case of Seymour *vs.* Osborne, only declared what, up to that time, had been recognized as the law in regard to reissues.

And it is contended, most respectfully, that the reissues in the present case, of both patents under the Act of 1836, construed with the aid of the cases here referred to are valid; provided the Court shall be satisfied, as a matter of legal construction, that the reissued patents are for the same inventions as those embraced in the original specification, although the claims for the combination of the several elements are more numerous in the new than in the old specifications.

Again, it is most respectfully contended, that although the Supreme Court may change the rule of construction which it is held, was established by the cases of Wilson *vs.* Rousseau and Seymour *vs.* Osborne, yet the reissues which were granted under the Act of 1836, as construed by those cases and in accordance with the practice there shown, ought not to be declared invalid under a rule of construction subsequently established.

There could be no better illustration of the practice of the Patent Office as shown in the case of Wilson *vs.* Rousseau, than is shown in the Reissue 2,490. The original patent was in existence, having been granted in 1863, but the seat, the principal feature was not specifically claimed. Agreeably to the decision in the recent case in 4th Otto, 350, this principal feature of the patent would have been regarded as dedicated to the public. That was not the understanding, however, of the Commissioners of Patents, who finding it claimed by another party, gave claimant notice, declared an interference, and called on him to establish his priority. This was litigated strenuously, and finally decided in favor of the Appellant on the 30th September,

1865—whereupon the Reissue was granted February 10th, 1867, as ordered by the Supreme Court of the District of Columbia.

If these views are correct, then it is not the *time* when the imperfection of the original patent in its descriptions or its claims, was discovered, that is important, but it is whether such imperfection exists without fraudulent or deceptive intention on the part of the patentee.

If there is a sufficient model or accurate drawings, this is a matter generally of easy ascertainment, and in the case now before the Court the model furnishes a perfect standard of comparison.

If it should be said that the decisions of the Supreme Court at the last term—Miller *vs.* The Brass Company, James *vs.* Campbell, Bantz *vs.* Bantz, and Matthews *vs.* The Machine Company—ought to have been regarded as conclusive upon the subject of reissued patents,—it is most respectfully suggested, to quote from an article in the number of the American Law Review for September, 1832, "that when the effect of these decisions was to paralize, if not render nugatory a very large proportion of the must valuable patents in existence, the manifestations of solicitude will not be attributed to a disposition to find fault with the Court or to question its wisdom and conservatism,"—but to a desire, where the interests are as important to the Appellant as these now involved, to distinguish this case from those here referred to.

In the case of Miller *vs.* The Brass Company there were circumstances different from those that distinguish the present case. Apart from the fact that the patent was originally granted in 1860, and the last Reissue was in 1876, a period of fifteen years, the Reissue in truth was not only for a different thing, but for the very thing which the original patent was intended to avoid and dispense with.

In the case of James *vs.* Campbell, 3 Transcript Reports, 441, there were no less than three Reissues between the 4th April, 1863, and October 4, 1870. Here there was a palpa-

ble enlargement. The original patent had confined the stamp used for cancelling post marks to an *elastic* substance, while the Reissue claimed any *suitable* substance, which would have protected a metallic one. Here, too, new diagrams were added, and a process was included. "The Reissue" says the Court "was for the purpose of expanding and generalizing the claim so as to make it embrace an invention not described and specified in the original."—The Appellant, here, however, merely describes what he invented more fully, as it is exhibited in the model and drawings that accompanied his application.

In the case of Bantz *vs.* Bantz, 4 Transcript R., 341, there was an interval of 7 years between the original patent of Jan. 22, 1834, and the Reissue of Feb. 6, 1842. In this case, the patent was intended, says the Court, to cover a combination of the several contrivances therein described, and not to cover the several parts of the former *as distinct devices.* Without referring further to this case, the above remarks in regard to the case of James *vs.* Campbell, apply to it. Here the Appellant's claims in both his patents are mere descriptions of parts of his invention, necessarily coactive to produce the whole machine.

In the case of Mathews and others *vs.* The Machine Company, 4 Transcript Report, 347, of the patents involved, one was dated April 30th, 1872, being a Reissue of one dated January 26th, 1854, and the other dated in 1872. Here the Reissued patent was 14 years subsequent to the original one, and here in the language of the Court, the issue was not only for a broader claim made many years after the original was granted, *but for a different invention.* Without going into the argument here, it is respectfully suggested that there are points of difference between the two cases sufficient to distinguish them.

Whatever may the effect of the above decisions upon the patent No. 2,224, it is respectfully suggested that the circumstances under which No. 2,490 was issued, should exempt it from this operation.

Assuming then for the sake of the argument, and in the hope of being able to show that the present case comes within the scope of the old decisions, we turn to the

Reissue of No. 2,224.

There is no doubt that the reissued specification is much fuller than the original; an examination of the two will show however, that there is nothing claimed in the reissue, that is not found in the original.

In the original, there are but three claims; while in the reissue there are nineteen, covering the authorized combinations of the original elements.

The claims of the original, are as follows:

1. A combined reel and rake rotating upon a verticle axis, and having its arms successfully turned up into an inverted position, to pass over the main frame, substantially as explained.

2. The inclined standard I, rigidly mounted upon a loosely hinged platform, and employed to support a revolving reel and rake in an unchangeable position, in relation to the said platform, without obstructing the free motion of the latter.

3. The yielding and swivelled rod Q, operating in combination with the band P, and pulleys O and R, in the manner and for the purpose herein shown and explained.

The specification of the reissued patent, is to be found at p. 60 of Record, and will not be quoted here, reference to it being easy in the record.

The witness examined to prove the discrepancies between the original and the reissued specifications, is the expert, Eliot, whose testimony has already been adverted to in other connections.

Without following Mr. Eliot verbatim, it is sufficient to say, that he begins his criticisms by this quotation in the original specification,

"H is a link by which the upper end of the platform is suspended from the back of the main frame."

And the discrepancy pointed out by Mr. Eliot here, is, that the point of suspension of this link, is shown in the drawing to be on a line with the left face of the drive wheel, while in the model, it is represented as being a little nearer the right face, which gives Mr. Eliot an opportunity to say that the reissued specification, makes this point of suspension of great importance—the drawing placing it "more than half the distance of the entire face of the drive wheel" further to the right than is represented in the original model.

Now this is absolutely trifling. It is evident, on looking at the original drawing, that the object of the projection, with the link from it, is to transfer the weight from the outside support to the body of the main frame; and that the Reissue, the drawing and the explanation, tell the public, that the nearer the centre between the wheels the weight is transferred, the better. Eliot's criticism would be worth more, if the very slight change of location of the link in the drawing, to which he refers, were of the essence of the improvement, which it is not.

This is strange, indeed, from a witness produced as an expert, who on X-examination, p. 293, X-Q. 121, says: "That he understands, it is allowable in a reissued patent, for the patentee to re-describe his invention, and to include within the description and claims of the patent, *not only what was well described before, but whatever else was suggested or substantially* indicated in the specification or drawings which properly belonged to the invention as actually made and perfected."

In this understanding of the law as it stood when Mr. Eliot testified, he was certainly not alone either in or out of the profession.

Again, Mr. Eliot objects that "link or chains" are the words used in the Reissue, while "link" alone is to be found

in the original; and also, that while in the Reissue the word "finger beam" is frequently used, in the original patent the word is not used at all—the reply to which is, that "link" and "chain" are clearly equivalents here, and that the location of the finger beam is shown in both drawings and model; and inasmuch as the patent is for a harvester of a kind that cannot exist without a finger beam, *its presence was a matter of course*, and needed no words to describe it.

Again he thinks the "hinged joint finger beam," a phrase used in the Reissue for what is not shown in the drawings of the original is new matter introduced into the Reissued patent. Now, in the first place, the "hinged joint finger beam" *is* shown in the drawings of the original, joints being indicated at both ends of the bar G, one opposite the wheel B, and the other at the foot of the rake post, where the pin of the hinge is shown thus, o; and in the next place, the original specification declares "that the platform is so attached and supported as to permit it to conform to the irregularities in the surface of the ground," which would be impossible save for the "hinged joint finger beam."

Again, the witness makes the Reissued patent invalid, because of the introduction of the finger beam as a support for the rake post, while the platform is, in the original specification, alone referred to; when we all know that the finger beam and platform are connected rigidly together, and the alternative location of the reissue is but a clearer indication to the public of the manner in which the principle of the invention can be carried out. Weak as this testimony is, it was pressed with much vehemence before the Circuit Judge, as if it could make any difference whether the finger beam or the platform carried the post.

The object of the invention was to secure the parallelism of the rakes and beaters to the platform as they swept over it, carrying the grain before them to be dropped upon the ground. The undulations of the finger beam and platform corresponding with the varying undulations of the ground,

this parallelism which was vital to the machine, could be secured in but one way, which was to place the rake post on the undulating finger beam and platform, and this object, which was of the essence of the invention, was just as well secured by placing the rake post on the finger beam, or a few inches from it on the platform, or making it straddle the line of connection between the two.

The function of the rake post was independent of its position, whether a few inches more on one side of the dividing line between the platform and the finger beam than the other.

In a suit on the original patent, the defence had been, that the rake post was on the finger beam and not on the platform, the decision would certainly have been, that the difference was colorable only.

The next criticism is that a more minute description of the functions and construction of rakes is "injected" into the reissue, and among other things the statement that the machine can cut grass, and a description of how it can be adapted to that purpose ! ! ! ! Surely this requires no notice.

If the amplification of the specification was to give a clearer description of the machine to the public, than was intended in the original specification, the amplification was a merit not a defect.

Having exhausted his list of supposed discrepancies between the original and reissued specification, the witness next proceeds to criticise the testimony of Mr. Renwick *seriatim*, and objects to his analysis of the first claim of the Appellant's Reissued specification, because the original specification makes no mention of a finger beam, or a cutting apparatus, or a hinged joint connection,—when these are necessary parts of the machine as a harvester, which cannot exist without them—the hinged joint being the means by which the finger beam and platform accommodate themselves to the undulations of the ground ! !

It will be found throughout the testimony of Mr. Renwick, that he has referred in detail to the elements apparent in the drawings and model by which the effect is produced—the only difference between the two specifications being, not in the introduction of new elements or new modes of construction, but in *naming* what necessarily exists in both.

The 7th question of the Appellees' counsel, assuming that Eliot has already established the fact of "interpolations and alterations" in the reissued specification, calls the witness' attention to the model of Appellees' harvester, when the witness expands himself in showing that the mechanism of the Appellees' *rake* apparatus is unlike that described in the Appellant's reissued patent. This may very well be, and yet the Appellees may infringe the first claim of the Appellant—which is independent wholly of the mechanism by which the rotation of the rakes is caused.

The witness, going now to the 8th claim, says that Renwick is all wrong because he enumerates a cutting apparatus, and a hinged joint as parts of the machine, which, while they must, as already said, necessarily exist, are not mentioned in the original specification; and because while Renwick speaks of the *inner* drive-wheel, the original specification does not describe which it is! as if the drawing and the model and the very purpose of the invention did not indicate it!

The witness then swears that the Appellees do not violate 8th claim.

To go into an examination of the Eliot testimony, in regard to infringements would protract unnecessarily a brief already long. It is sufficient to say, here, in this connection, that, with the models before it, the Court, with Renwick's testimony in hand, can itself make the comparison, as it reads, sentence after sentence, and sees for itself whether the elements enumerated by Renwick, in proving infringement, are not found on the Appellees' model.

The objection to the 9th claim is, that while the projecting bracket is shown in the drawing of the original patent, it is not mentioned in the specification; and that no finger beam is mentioned in the original specification—although it describes a reaping machine which cannot exist without one.

Here, again, a comparison is asked of Renwick's testimony, as to what he finds in the Appellees' machine, corresponding with the 9th claim of the Appellant.

Going now to the 11th claim—the witness says, that in the original specification he finds "no cutting apparatus," nor "a hinged joint." Why, when he finds a harvesting machine whose platform undulates, does he not find both? The criticism is absurd, and the cross-examination of Eliot demonstrates its absurdity from his own admissions.

A comparison of the models with Renwick's testimony, demonstrates the substantiality of the infringement.

The 12th claim comes next, and Eliot repeats what he had already said about the finger beam and the finger joint not being mentioned in the original specification—and says that the Appellees do not infringe the claim, because of a different organization of the raking apparatus, which is not involved in this case; and because the raking apparatus does not rise and fall independently of the draught-frame; which is not true, in point of fact, as the Appellees' model clearly shows.

The 14th claim Eliot objects to, because he does not find in the original specification, a finger beam and cutting apparatus secured as stated by Renwick, nor any description of a cutting apparatus!

Renwick enumerates all the parts of the machine carefully, as he finds them *in the model and drawings, and as they are involved necessarily in the construction of a reaper;* and because Eliot does not find them enumerated in the

original specification—he pronounces the reissue invalid, because of its "injection" of new matter!!!

Then comes Eliot, on the 16th claim, which is rejected on the same ground, to wit: that there is no mention made in terms of the cutting apparatus, as secured to the finger beam, [as if they were not necessarily, as Eliot himself admits in X-Exam. combined.]

And Eliot denies the infringement here, because he says that there is no equivalent in the Appellees' machine for the belt-tighteners described in the Appellant's Patent.

The witness does not undertake to say that the belt-tightener is not described in both the original and reissued patents; but he does say that the means employed in the Appellees' machine to accomplish the same object are not equivalent. Upon this point, the Court is referred to the testimony of Renwick, p. 43, and the cross-examination of Eliot at p. 284, Appellees' proofs, cross-Ques. 157.

The only criticism of Renwick's testimony as to the 19th clause, is that in the original patent, there is no mention made of the hinge connection uniting the finger beam and draught-frame—an oft-repeated and most unfounded objection—and Eliot holds that there is no infringement because the means of driving the rakes is different, and that the rake and platform are not independent in their motion of the main frame.

So much for 2,224—and the whole of Eliot's objections may be answered in a few words. In reissuing, Appellant gave a fuller and clearer description of the invention than he had done in the original patent, *but without including one element that was not to be found in the original specification, drawings and model*—and that in increasing the number of his claims, he did no more than protect his invention,

by making them cover existing combinations of which he was the author.

It is proper to refer, before leaving the reissues, to dates as affecting the questions now involved; and first in regard to 2,224.

The original application for the patent now known as 2,224, being the number of the reissue, was March 28th, 1862, and the patent was issued May 20th, 1862. On the 12th June, 1862, page 26, an interference was declared, which was dissolved October 12th, and on the 19th October, 1863, the Appellant's solicitor asks that the examination of the reissued application may be proceeded with, p. 27. It would seem then that between the date of the original patent, May 19th, 1862, and the application for the reissue, October, 1863, a period of only seventeen months intervened, from which ought assuredly to be deducted the time when the interference was in progress, from June 12th, 1863, when it was declared, to October 12th, 1863, when it was dissolved, a period of four months, which would reduce the time during which unreasonable delay could be charged to less than thirteen months; and it is most respectfully insisted that the most stringent rule as indicated by the cases decided at the last term and here referred to, would hardly be fatal in the present instance.

In regard to 2,490, the original was granted, November 3rd, 1863. The notice of interference was given February 24th, 1864, p. 15, and the decision of Judge Cartter (p. 20,) was rendered September 30th, 1865. In this notice, two months, expiring April 24th, were given to file an application for a reissue, which was the course of practice in the Patent Office for the purpose of placing the original patent and the opposing application in antagonism. Here, the only delay chargeable to the Appellant would be rather less than three months: the interval between the 30th September, when the interference was decided, and the date of the reissue, November 7th following; being no more than was

necessary for official forms. The interference before Judge Cartter was during the term of the original patent, and was decided, as above, in Appellant's favor, September 30th, 1865, and a patent granted thereon on November 7th, 1865. This patent was surrendered, and the reissue 2,490 now in controversy was granted February 19th, 1867.

It is thus seen that in 2,490, as well as in 2,224, there was no such delay as ought to bring the present case within the operation of the stringent rules above mentioned, even should the Court deem them applicable on general principles.

There could be no better illustration of the practice of the Patent Office, as shewn in the case of Wilson *vs.* Rousseau, than is shown in Reissue 2,490. In the original patent the seat was not specifically claimed. Agreeably to the decision of the recent case of Miller *vs.* The Brass Company, 14 Otto, p. 350, this main feature of the patent would have been regarded as dedicated to the public. That was not the understanding however, of the Commissioner of Patents, who, finding it claimed by another party, gave the Appellant notice, declared an interference, and called upon him to establish his priority. This was litigated strenuously, and finally decided in favor of the Appellant on the 30th September, 1865,—the subsequent Reissue was granted February 16th, 1867. Ought the Commissioner, instead of giving the Appellant the notice that he did, have informed the other claimant that the invention had been already dedicated to the public?

In regard to 2,490, "Eliot says that he finds the prominent points of difference between the original patent and the reissue, consist in the combinations in which the driver's seat on the machine is involved," and then with great simplicity, says that in the original patent, he finds no mention made of the driver's seat, *except in the last* line of the descriptive portion of the specification, in which it says, "W represents the driver's seat."

But it is respectfully submitted that this was all that was necessary to authorize Appellant to enter into the details of construction as fully as he has done in the reissue. The very object of the reissue would be defeated, were not this allowed. Why the witness says, p. 258, after speaking of the reissued patent:

"All which combination is in my opinion new matter, except what may be *gathered from the drawings* and words above quoted by me to wit, W represents the driver's seat." But what can we have better than the drawings to justify a reissue. What better can explain an invention than the drawings that make it visible to the eye, free from the inaccuracies that attend the use of words alone.

With regard to the first claim, the objection is that the driver cannot ride on the seat while the rakes are in operation; therefore the driver's seat cannot be an element.

The criticism of Eliot on the 1st claim of 2,490 is expansive, and when treating of the infringement, he discusses law, and suggests possibilities; but the fact of infringement is apparent on inspection, and is fully sustained by the testimony of Renwick, p. 46.

With regard to the 2nd claim of 2,490—Eliot and Renwick agree; and as regards its infringement, Eliot refers to what he has said about the infringement of the first claim, and wherein he and Renwick differ—a difference to be determined by *a comparison of their respective testimony with the models before the Court.*

Eliot and Renwick agree in regard to the 6th claim of 2,490. Upon the question of infringement, Eliot becomes argumentative—and while he does not admit that a chain belt is an equivalent for a tumbling shaft, yet in the next paragraph, he admits that the two devices are used for the purpose of communicating motion from one shaft to another. Now, as this communication of motion is of the essence of the claim, and the mode of communicating it a matter of indifference, it is difficult to see how there can be a doubt as to the two modes being equivalents.

So Eliot and Renwick agree about the 7th claim, but as regards infringement, Eliot relies on what he has said in regard to the preceding claims—which has been already commented on.

Questioned about the 9th claim, Eliot says, there is a difference between Renwick and himself, on account of the views taken by them respectively, of the driver's seat; and on the question of infringement he holds that it does not exist, for the reasons previously given by him in connection with the first clause of 2,490.

Much space has been given to Mr. Eliot, the only expert of the Appellees, and something might be said of the facility with which he understands his side of the case. The greatest disfavor that can be done to him is to ask the Court to regard him in the light of his cross-examination.

☞He was examined in part to prove a difference between the original and reissued patents, and the upshot of his testimony is that the reissue is a description of the parts and functions of the invention, without the introduction of a single element that is not described in the specification or exhibited in the drawings and models of the originals of 2,224 and 2,490; nor can a better suggestion be made to the Court than that it should read the reissues with the models and drawings of the originals before it, and determine, on inspection, whether the latter amounts to anything more than a fuller description of what they exhibit to the eye, having in view the object of the inventions.

So far then as the date of these inventions go we have antedated all the patents that preceded them; and so far as the correspondence between the original and reissued patent is concerned, we have shown that there is no substantial difference, corroborating in this manner the action of the Commissioner of Patents in permitting the reissues 2,224 and 2,490.

GEO. H. CHRISTY,
JOHN H. B. LATROBE,
for Appellant.

OFFICE SUPREME COURT U.S.
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No. 135.

United States Supreme Court.

IN EQUITY.

Reuben Hoffheins, Appellant,

vs.

C. Russell and Company, Clement Russell, William K. Miller, and James S. Tonner.

ARGUMENT FOR APPELLEES.

GEORGE HARDING,
Counsel for Appellees.

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Supreme Court of the United States.

Reuben Hoffheins, Appellant,

vs.

C. Russell & Co., Clement Russell, William K. Miller, and James S. Tonner.

No. 142.

APPELLEES' ARGUMENT.

Mowing machines at first consisted essentially of a finger-beam and vibrating sickle attached to a frame supported on one wheel, the sickle being vibrated on the finger-bar by a connecting rod and crank operated by the wheel which supported the machine. With one-wheel mowing machines the finger-bar forms a part of the support, and whenever the finger-bar passed over an obstacle as shown in figure 1, it tilted the whole machine on the wheel,

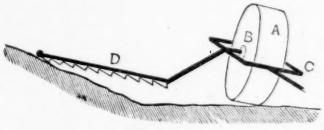


FIG. 1.

and if the wheel passed over an obstacle, as in figure 2,

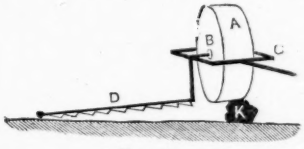


FIG. 2.

it caused the whole machine to rest on the outer end of the finger-beam and the wheel. In both cases it will be perceived that the cutter must cut unevenly. About 1859 mowing machines were arranged so as to have a frame supported on two wheels, and to have the finger-beam attached to that frame by a double-hinged coupling-arm, so that while both wheels supporting the frame rested on the ground, the finger-beam could assume any angle to the frame, and thus conform to any inequalities of the ground without disturbing the frame, as illustrated in figures 3, 4, and 5.

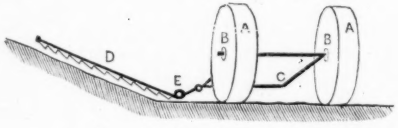


FIG. 3.

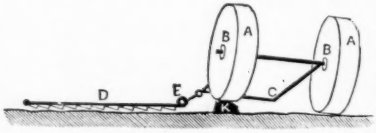


FIG. 4.

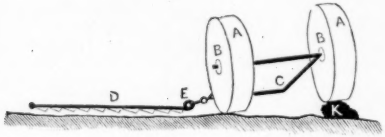


FIG. 5.

The cutting apparatus in these machines consisted in a finger-beam having a series of fingers, through which a scolloped or zigzag sickle was vibrated by means of a crank, as shown in figure 6. The rod which connected the crank-wheel with the cutter was jointed at each end, and hence it is apparent that no matter what angle the finger-beam

assumed relatively to the frame, the cutter was vibrated through the finger-beam. In figure 6, D is the finger-

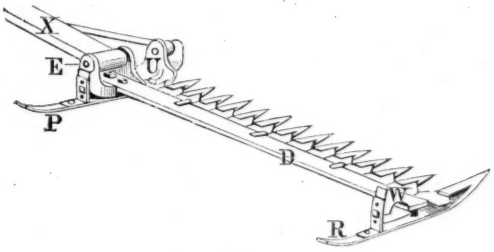


FIG. 6.

beam, E the hinged joint, X the coupling-arm or radius bar, which is connected to the frame, as shown in figure 7,

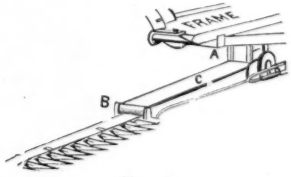


FIG. 7.

by a hinged joint at A. F is the crank wheel which vibrates the cutter.

Reaping machines differ from mowing machines in having a reel to press the grain on to the cutter, and a platform attached to the rear of the finger-beam on which the grain could fall as it was cut, and thus sufficient grain be collected to form a gavel before it is deposited on the ground. Reaping machines also differ from mowing machines, in having the finger-beam carried at a sufficient height above the ground to leave a stubble of about six or eight inches. The one-wheeled mowing machine was convertible into a reaping machine, by placing a small wheel at the outer end of the finger-beam, and attaching a platform to the rear of the finger-bar.

Prior to 1856, the reel which gathered the grain to the cutters was always of the plan shown in figure 8. The

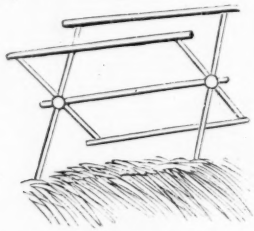


FIG 8.

cut grain was originally raked off the platform by hand. Afterwards a vibrating rake was used, which vibrated back and forth over the platform under the reel, as shown in figure 8½.

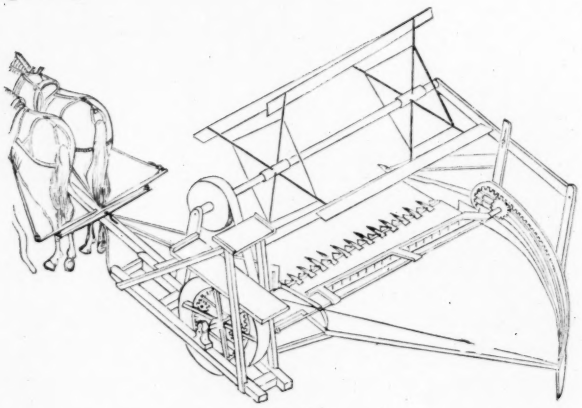


FIG 8½.

In 1856, Owen Dorsey introduced on a one-wheel reaping machine, a continuously revolving rake which entered the standing grain in front of the cutter, and pressed it back against the cutter; and then in its continuous course swept the cut grain off the platform on to the ground in a gavel. This machine, as described in Dorsey's patent,

page 403 of record, is shown in figure 9. With the old

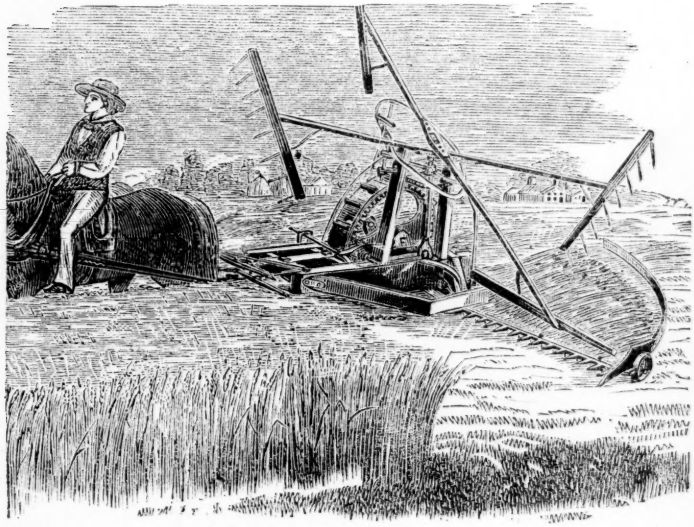


Fig 9.

form of reel in use prior to Dorsey's invention, the driver could sit on the frame without interference from the reel. With the Dorsey rake located on the frame of the machine, a driver could not sit upon the frame of the machine without being struck by the revolving arms of the gathering and discharging rake.

Lewis Reese modified the Dorsey continuously revolving, gathering, and discharging rake, by separating the diametrical arms so that each radial arm should revolve independently of its opposite radial arm. By this means the rake arms in revolving over the frame, could rise so as to allow space for a driver to sit on the frame of the machine. (See Reese patent [redacted], 1860, page 384, drawings, page .)

T. S. Whitenack, in his patent of February 5th, 1861, hinged the opposite revolving radial arms of his rake inde-

pendently for the express purpose of enabling a driver to sit upon the frame of the machine, as he recites in his original specification at page 422 of the record.

"This invention relates to certain improvements in that class of raking attachments for harvesters, in which the rake and beaters in passing over the platform describe the arc of a circle in a horizontal plane. The object of the within-described invention is to apply this class of raking device to the machine in such a way as to admit of the use of the driver's seat on the machine." * * * (Record, page 422. See book of drawings, page .)

James S. Marsh obtained a patent dated February 10th, 1863. (See record, page 430. Book of drawings, page), in which he showed continuously revolving rakes, the radial rake-arms being separately hinged so as to permit the rake-arms to rise and thus enable a driver's seat to be placed on the machine without being struck. The drawing annexed to the patent, shows the elevation of the radial arms relatively to the seat.

The Ball machine, as used by Hoffheins and by these defendants as a reaping machine prior to 1861, is shown substantially in figure 10.

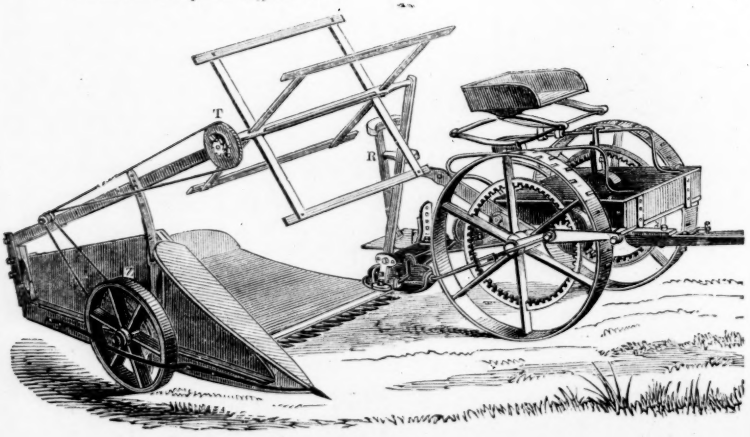


FIG. 10.

The old-fashioned reel was used to bring in the grain, and the finger-beam was connected to the main frame by a hinged coupling arm. When it was desired to convert this machine into a mower, the platform and reel were removed, and the machine presented the appearance shown in figure 11.

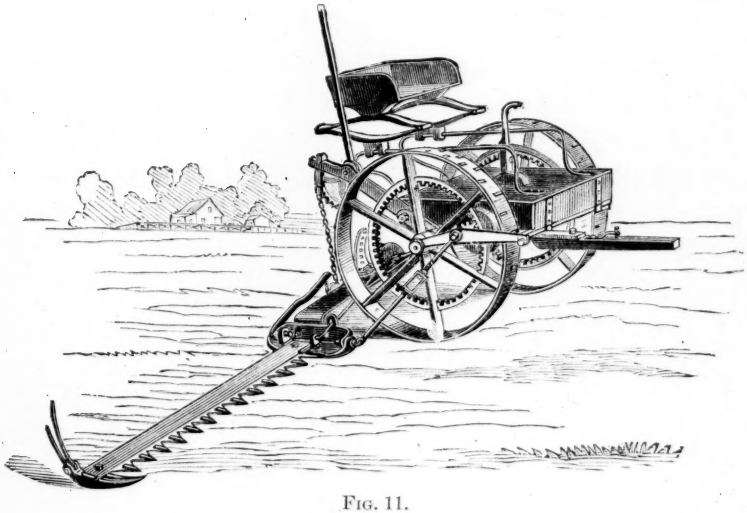


Fig. 11.

Hoffheins undertook to apply a continuously revolving gathering and discharging rake to such a machine when used for reaping, as shown in figure 10.

Hoffheins adopted a somewhat modified system of rake from Dorsey, probably to avoid infringing Dorsey. Each pair of Hoffheins' rakes were rigidly attached to a shaft on which these arms could vibrate while the shaft carrying the arms rotated about the centre of its length.

The form of rake devised by Hoffheins is shown in figure 12.

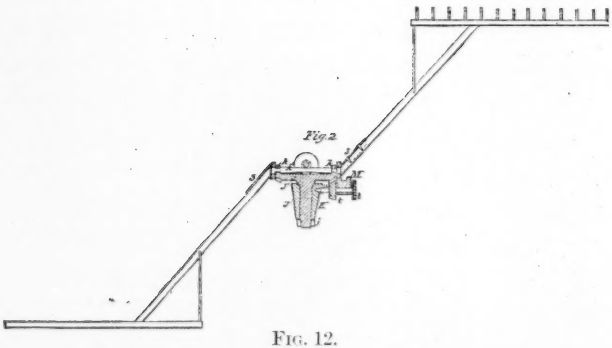


FIG. 12.

A pair of Hoffheins' inclined rake-arms, with the rakes attached, are shown in this figure; also the shaft *k k*, to which the rake-arms are attached, and the vertical shaft *k* on which the rake-head rotates. This plan of rake formed the subject-matter of Hoffheins' first claim of his original patent of 1862. The claim was as follows:—

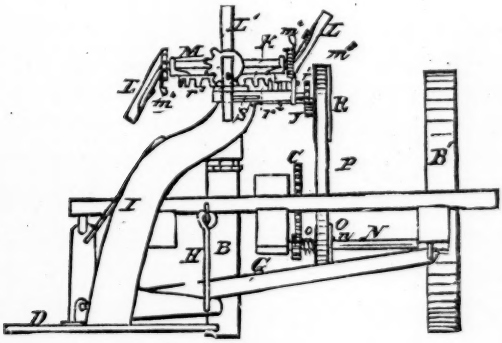
First.—"A combined reel and rake, rotating upon a vertical axis, and having its arms successively turned up into an inverted position to pass over the main frame, substantially as explained."

The description in the specification was as follows:—

"J is a box mounted on top of the post I, and constituting the bearing in which the disk K rotates. The rakes or reels arms, L and L′, are mounted in couples upon the end of the horizontal shafts M and M′, which are journaled at right angles across the rotating disk K. The oblique positions of the rakes upon their shafts M M′ are clearly shown in the drawings, and the manner in which they are elevated to pass over the frame and lowered to incline the standing grain over the cutting apparatus, and remove grain from the gavels on the platform, will be hereafter explained." (Record, page 23.)

In Hoffheins' re-issued patent of 1866, No. 2224, the second claim is the same substantially as the first claim of his original patent of 1862.

Hoffheins also devised a mode of supporting his rake-head on an inclined standard, the object of which was to support the rake-head in its proper position, so as to do its work and to keep its base rigidly attached to the platform. This inclined standard is shown at I in the figure, which



is a copy of figure 3 of Hoffheins' original specification. (See Record-book of Plates, page .)

Claim 2 of Hoffheins' original patent of 1862 is as follows:—

"*Second.*—The *inclined* standard I, rigidly mounted upon a loosely hinged platform, and employed to support a revolving reel and rake in an unchangeable position in relation to the said platform *without obstructing the free motion of the latter.*" * * * * *

The description in the body of the specification of the original patent of 1862, corresponding to the second claim, is as follows:—(Record, page 374.)

"I is a post rigidly secured to the inner side of the platform, *and inclining over the rear of the main frame;*

i i is a brace rod extending from the draw-bar to the said post to support the latter at top." * * * *

"It will be seen that the platform is so attached and supported as to permit it to conform with the utmost freedom to inequalities of the surface of the ground; and the standard or post I being rigidly mounted upon the platform, *and inclining over the back of the main frame*, supports the reel and rake in an unchangeable position in relation to the platform, *without obstructing the free motion of the latter* in any degree."

In the reissue of this patent (No. 2224, April, 1866), claim 5 very nearly corresponds with claim 2 of the original patent, the original and re-issued claims, however, differing as shown in the subjoined comparison. The reissue claim is expanded so as to embrace the location of an "inclined" post or its equivalent *on a finger-beam* as well as on the platform."

The interpolation of the word "finger-beam" is wholly unwarranted.

Original Patent, 1862, Claim 2.	*Re-issue, No. 2224. 1866, Claim 5.*
The inclined standard I rigidly mounted upon a loosely-hinged platform, and employed to support a revolving reel and rake in an unchangeable position in relation to the said platform without obstructing the free motion of the latter.	An inclined standard-support, F, or its equivalent rigidly mounted upon a loosely-hinged platform or finger-beam, and adapted for supporting a sweep-rake in an unchanging position in relation to said platform without obstructing the free motion of the platform or finger-beam, substantially as shown and described.

Nevertheless neither appellant's counsel or expert claim that appellee infringes this re-issued fifth claim expanded as above set forth.

In Hoffheins' machine of 1862, the platform to which the rake-post was rigidly attached was constantly varying both its elevation and inclination relatively to the driving-wheel and the frame. In order to drive the rake by an

ordinary band under this varying condition, Hoffheins invented a combination of devices which are shown in figure 13.

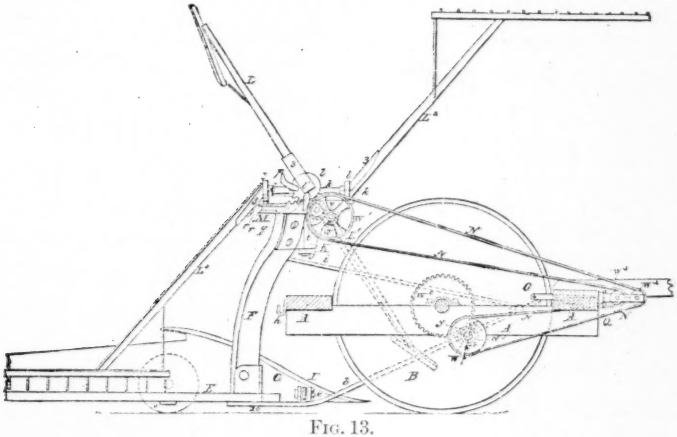


FIG. 13.

The band passes around the driving-pulley on the main frame, and then, instead of passing directly to the pulley on the rake-post, this band passes over two small pulleys on the extreme front of the frame of the machine, located at the centre of the arc of vibration of the platform up and down. These small pulleys are constructed so as to swivel on a support Q at the same time that the band is kept tight by a spring, as shown in figure 14, which is a copy of the drawing annexed to the Hoffheins patent.

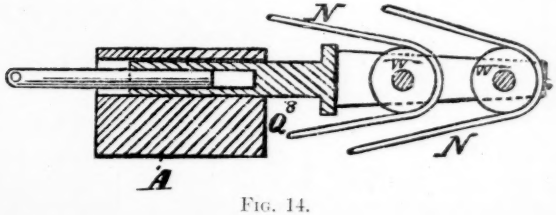


FIG. 14.

The feature of this device was the combination of a yielding and swiveling support with a band, and the pulleys on the rake-head and the pulleys on the frame. All these pulleys were smooth, and the band is the ordinary leather band.

This feature of Hoffheins' invention was secured by the third claim of his original patent, which corresponds very closely with the eighteenth claim of his reissued patent (No. 2224, of 1866). The two claims are subjoined for comparison below :—

Original Patent, 1862, Claim 3.	*Reissue, No. 2224, 1866, Claim 18.*
The yielding and swivelled rod Q operating in combination with the band P and pulleys O and R, in the manner and for the purpose herein shown and explained.	The pulley support Q, with its pulleys W^2 W^2 in combination with a band or chain N and pulleys W^1 W^3, substantially and for the purpose set forth.

The appellees are not charged either in appellant's brief or by the expert testimony with the infringement of this claim of the reissue. It is deemed important here to note that Hoffheins specified and claimed in his original specification of 1862, only the three features of invention above-described.

Among others he has specified in his re-issue of 1866 (No. 2224) sub-stantially the same three features. It is conceded that appellees do not infringe either of these three claims, either as contained in the original or re-issued patent.

The mechanical problem which Hoffheins sought to solve was the adaptation of a continuously revolving gathering and discharging rake to a two-wheeled, loosely-hinged, or jointed finger-bar reaper. The important points involved in that invention were :—

1st. The character of the rake he adopted ;

2d. Supporting it so that the base of support should move with the platform ;

3d. That it should not interfere with the driving mechanism of the cutter ;

4th. That this support should not itself interfere with the vibration of the platform by reason of the support striking the frame;

5th. That the rake should be driven by mechanism which would operate notwithstanding the vibration of the platform.

6th. That the centre of the rake should be supported in line with the cutter.

The appellee in solving the same problem adopted a form of rake entirely different from that of Hoffheins, viz., one in which a head was employed such as is shown in figure 15,

FIG. 15.

into which head a series of radial arms were pivoted entirely independent of each other, having a double cam guideway for each arm, whereby the rake arms could be elevated vertically in passing the frame so as not to strike the frame in their revolution. By this means it became possible to place the rake support on the finger-beam alongside of the frame in the line of the cutter instead of behind the frame.

He designed a bridge over the inner shoe of the finger for the foot of the post to rest upon, which permitted the rake support to be located on the finger beam, and at the same time permit the cutting apparatus to be vibrated under the bridge.

Figure 16 represents the inner shoe of the finger-

FIG. 16.

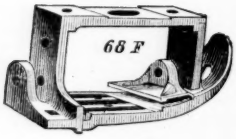


FIG. 17.

bar as ordinarily constructed, and figure 17 the appellee's bridge for supporting the rake standard.

Appellee placed a hollow vertical post to support the cam

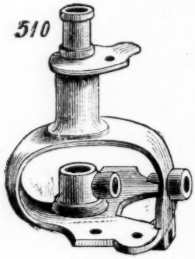


FIG. 18.

guide resting at its lower end on the bridge as a base. This cam guides the rake arms separately, and at the same time the hollow post permits the vertical shaft which revolves the rakes to pass through it.

The cam guideway which rests on the hollow post is shown at figure 19.

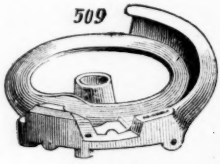


FIG. 19.

4th. He devised a mode of driving the rake arms, whereby a direct driving connection was made from a sprocket pulley, such as shown in figure 20, to a corre-

FIG. 20.

sponding sprocket pulley on the rake head by means of a chain, having links specially adapted to said sprocket pul-

FIG. 21.

leys. By the use of the sprocket pulleys and chains as a driving mechanism, the necessity of a tight friction-band or belt was dispensed with; also the necessity of an intermediate central system of pulley around which the platform vibrated; also of a tightening pulley. The only adjunct to appellee's chain was a guide pulley to prevent the chain from running off the sprockets, which had a spring to preserve it in proper position to do that work.

The machine of appellees is shown in figure 22.

Hoffheins' machine and mechanism of 1862 was abandoned within five years, and he then set about re-issuing his patent of 1862 so as to cover and control machines like that of appellees, containing the new features as above.

The theory on which his re-issue is based is that having shown in his original patent of 1862 a special device for

supporting a rake attached to a particular part of the *platform* so as to vibrate with the platform, he could claim in his re-issue *any* device whatsoever for supporting a revolving rake, whether located on any part of the platform or even on the finger-beam.

To carry out this theory he interpolated the word "finger-beam" into his specification as often as the word "platform" occurred, and states on each occasion that the rake is to be attached to the *finger-beam* or platform. He does not, however, show how his rake support could be attached to a finger-beam, or how his rake could work if supported in any such position, or how the connecting-rod of the cutter would work if the rake support was so placed.

Moreover, the organization of appellee's machine was such that by a long rod extending to the centre of his frame, and there suspended by a chain, he could gag the hinge joint when the coupling-arm is united to the finger-bar beam and thus transfer the centre of vibration of the platform to the centre of the frame between the wheels and so steady this machine on both wheels and avoid tilting. This will be apparent by reference to the appellee's machine. See figure 22.

Fig. 22.

Hoffheins sought by his re-issue to cover also this feature exhibited in appellee's machine; although no hint of any such useful effect was given in his original specification and the most meagre mention of a supporting link is given. In order to lay the basis of a new broad claim in his re-issue Hoffheins, in the preamble of the re-issue specification interpolates

"*It is important to have the suspension of the rake made in such a manner that the base of support of the axis of the rake is wholly upon the hinged finger-beam or the platform thereof.*"

The idea of placing the rake support on the finger-beam is never hinted at in the original, no finger-beam being even shown or suggested in the original specification.

In this preamble of the Hoffheins' reissue, No. 2224, he sets forth another feature of novelty as follows:—

(Speaking of the platform): "And while thus rising to conform to the ground or to pass obstructions *it is important that the great weight of the rake, finger-beam and platform* shall not cause the draft frame to tilt over on its right-hand drive wheel by sudden and abrupt motions, but shall tend to *insure a square run of the draft-frame upon the ground during the pitching* or rising and falling motions of the finger-beam, platform and rake, and thus an even and easy draft for the team to be secured."

Again Hoffheins says in this re-issue specification upon this same feature:—

"The suspension of the rake and reel with the platform and finger beam by means of the extension 2 and link or chain, transfer the weight upon the draft frame in such a manner that the said frame is *kept square* upon the ground, and besides this mode of suspension lessens the extent of the deflections of the rake, and renders them less sudden and abrupt."

So far as this suspended link is concerned, the only mention in the original specification is the following words:—

"H is a link by which the inner end of the platform is suspended from the back of the main frame" (referring to drawing of the original patent, of which figure 23 is a copy).

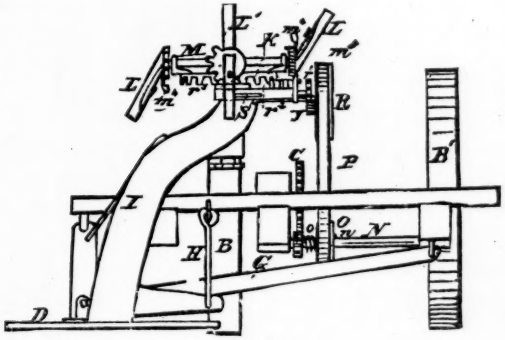


FIG. 23.

Besides expansion and modification of the function of this link H, the appellant modifies his drawing of the feature in the re-issue, as will be seen by reference to figure 17, which is a copy of the re-issue drawings, figure 9 supposed to correspond with figure 3 of the original patent.

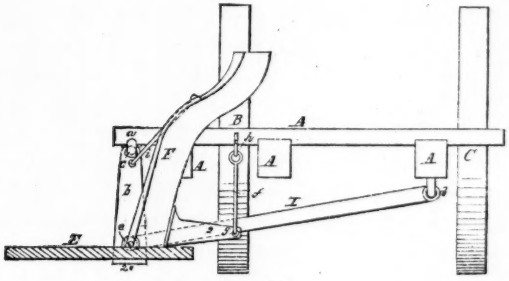


FIG. 24.

By examining the position of the link H in the original drawing, figure 23, and comparing it with the position of

the same link in the re-issued drawing, figure 24, it will appear that the link in the original drawing was so placed as to bring all the weight on the inner edge of the inner wheel, and thus tend to tilt the frame. While in the re-issue, by moving the link towards the opposite side of the wheel, and towards the centre of the frame, it tends to transfer the weight of the rake and platform more squarely on the wheels.

This interpolated expansion and modification in this re-issue of an unimportant and unnoticed feature in the original specification is made by appellant the basis of claim with a view to cover appellees machine, in which he has successfully transferred the weight of his rake and platform to the centre of the main frame about which centre the platform vibrates.

Appellants eleventh re-issue claim is as follows:—

"Preventing a too-sudden or abrupt deflection of a rake and reel mounted upon a hinged-joint cutting apparatus, by carrying the point of suspension beyond the rake support towards the centre of the draft-frame, by means substantially as described."

Bear in mind that the original drawing shows the suspension link to be directly in line with the inside line of the inner drive wheel, and it is only by changing the re-issued drawing that Hoffheins gets his suspended link "towards the centre of his machine."

It is of this very change that appellant's counsel at page 4 of the brief say: "The inner end of the cutting apparatus, or the end next to the main frame of the machine *was, previous to* the date of the appellant's invention, hung to or suspended from the main frame at a point outside of the inner or adjacent guide wheel. The appellant *as one of the elements of his invention, carried this point of suspension over to a point in rear of the adjacent drive wheel, or beyond its outer edge, thereby transferred a portion of the weight of the cutting apparatus, grain platform, and devices connected*

therewith, to the opposite drive wheel, whereby a more equal and uniform distribution of weight and strain was secured, and he also prevented or obviated in an effectual manner, the tendency of such weight to tip or tilt the draft or main frame.

This he accomplished by the use of an arm or bracket, designated as "2" in his patent, re-issue No. 2224, and which is rigidly connected to and extends from the rake-post F, or its metal footpiece, *beyond the outer edge of the inner or adjacent drive-wheel.* A link or chain is employed to connect the end of this arm or bracket 2 with a hook on the main frame above."

The "inclined" *rake-post* or standard, which was spoken of in the original as the only kind of rake-post, has wholly disappeared from the body of the re-issue specification as a qualifying word. The nature and extent of the change may be understood by comparing the two following extracts respectively.

Original Patent, 1862.

"I, is a post rigidly secured to the inner side of the platform and inclining over the rear of the main frame."

Re-issue Patent, 1866.

I, is a support for a combined rake and reel. This support is mounted rigidly upon the inner-front corner of the platform and heel of the finger-beam, but it may be mounted either wholly on the finger-beam, or wholly on any part of the platform, which is to the left of the left-hand drive-wheel B, or to the right of said drive-wheel if it is a right-hand machine. From the platform or finger-beam the support *may extend* in an incline position as high as the top of the draft-frame and then take a turn over towards the centre of said frame as represented, so as to form a support for the rake and reel, which shall be somewhat higher than the frame, and between the two drive or supporting-wheels. The particular shape and height of this support is

"It will be seen that the platform is so attached and supported as to permit it to conform with the utmost freedom to inequalities of the surface of the ground; and the standard or post I being rigidly mounted upon the platform and inclining over the back of the main frame, supports the reel and rake in an unchangeable position in relation to the platform without obstructing the free motion of the latter in any degree."

not very material, so long as the base of it is affixed at some point between the centre of the main frame A, and the outer-shoe or divider G.

[This clause which describes the effect of the inclination of the reel post is wholly omitted from the clause, of the re-issue describing the operation of the machine.]

Based wholly upon the departure from the words of the original specification which pointed to the "inclined" form of the reel standard as important, and to its base being attached to the "platform," appellant has interpolated into his re-issue the following claims, in which there is no limitation either to an "inclined" standard or support or to a support whose base is "attached to the platform."

Claims of Re-issue 2224.

"1. A sweep-rake, which is mounted upon the *heel of the finger-beam proper*, or upon the inner corner of the platform of a harvester, which has its cutting apparatus and platform hinged to the draft-frame, all in such manner that the rake-arm sweeps the platform from front to inner sides, and maintains a correct position in relation to the finger-beam and platform during the rising or falling movement thereof, on the point or points by which the finger-beam is connected to the draft-frame substantially as set forth."

"6. A standard or support F, which sustains the sweep-rake above the draft-frame or driving-wheel thereof, said

standard *being mounted directly and wholly upon a hinged finger-beam*, or the platform thereof, substantially as described and for the purpose set forth."

"8. In a harvesting machine, which has a cutting apparatus hinged or jointed to the main frame in such a manner as to allow it to conform at both ends to the undulations of the ground, and a rake *mounted upon said jointed cutting apparatus*, or upon the platform thereof, I claim so constructing and arranging the several parts that the support of the rake can occupy a position outside of the inner drive-wheel B, or a position which is between the point of suspension N, and the outer divider G, and can also be hung or suspended below the draft-frame substantially as described."

"9. Effecting a combination of a rake and reel located substantially as described *and a finger-beam and platform with the main frame* by means of a hinged draw-bar small beam, and hinged brace T, a hinge suspender F, and extension bracket 2, or their equivalents, substantially as and for the purpose specified."

"10. The combination of a rake and reel, a yielding draw-bar *b*, inner shoe of the cutting apparatus and hinged joint *e*, in the draw-bar, substantially as and for the purpose described."

"12. A continuously revolving rake, which *is mounted directly and wholly upon the platform or finger-beam*, so as to rise and fall therewith independently of the draft-frame, when said rake is located between the centre of the draft-frame and the outer divider, and passes in at the front of the machine upon the platform and sweeps around the inner side of the platform, substantially as described."

"14. The combination of a suspended hinge joint cutting apparatus of harvesters and a combined rake and reel, which is mounted directly and wholly upon the suspended platform or hinged finger-beam, substantially as and for the purpose described."

Claim 13 of the re-issue is deserving of special comment. It is as follows: "The combination with the double-hinged joint combined reaping and mowing machine, of a sweep-rake which enters at the front of the machine upon the platform, in such manner that the rake and the cutting apparatus rise and fall together while reaping, also in such manner that the rake aud platform may be readily removed, and the cutting apparatus and its inner and outer end allowed to float upon the ground and to accommodate itself to the undulations of the ground, substantially in the manner as described."

The original specification made no allusion to the machine being suitable to be used for cutting grass. The title of the re-issue was changed so as to cover a grass cutting machine. The two titles were as follows:—

Original Patent, 1862.

To all whom it may concern: Be it known that I, Reuben Hoffheins, of Dover, in the county of York, and State of Pennsylvania, have invented certain new and useful improvements in *machines for harvesting grain.*

The Re-issued Patent, 1866.

To all whom it may concern: Be it known that I, Reuben Hoffheins, of Dover, in the county of York, and State of Pennsylvania, have invented certain new an useful improvements in machines for harvesting grain and *grass.*

The following clause is interpolated in the re-issue of 1866, for which there is not a particle of warrant in the original specification: "If it is desired *to cut grass with the* machine represented, the rake and the platform with the wheel 10 are removed by unscrewing the metal foot-piece 9 and detaching the link F. This allows the shoe of the

draw-bar to rest on the ground in customary manner, while the grain side of the machine rests upon the ordinary supporting shoe not shown. Thus both ends of the finger-beam are left free to raise and fall, to conform to undulations in the surface of the ground."

Hoffheins' Re-issue, 2490, Feb. 19th, 1867.

This patent is re-issued on the surrender of the original patent, No. 40,481, dated November 3d, 1863, after an interval of four years.

The original patent, in the preamble and claim specified four features of invention as follows:—

"1st. In the peculiar construction and combination of frame gearing and double driving-wheels, for purposes hereinafter explained.

"2d. In a device for affording protection to the main crank shaft and strengthening the main frame.

"3d. In the use of a movable tongue, which may be secured in various positions to adapt it for various uses of the machine.

"4th. In a device for permitting the finger-beam to turn freely on its own axis."

The first claim of the original patent of 1863 covered

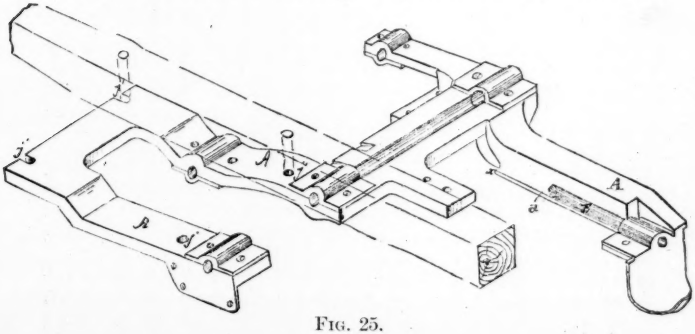


FIG. 25.

a combination of a main frame, such as shown in figure 25

First Claim.

1st. The main frame and gear frame A A, constructed as described, open at each end, when used in combination with shafts, gearing, and double driving-wheels arranged and operating as and for the purposes specified, with an arrangement of pawls and ratchets on the two driving wheels, whereby one or both wheels could drive the machine.

Appellees do not use this frame; on the contrary the appellees' main and gear frame is closed at both ends, as is shown in figure T T, which represents their frame.

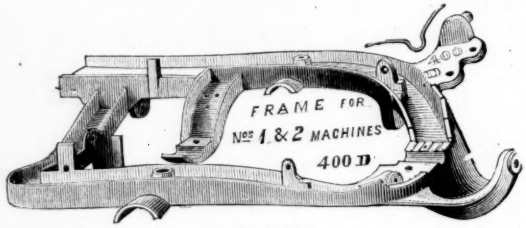


Fig. 26.

It is not contended that appellees infringe this claim.

In re-issuing this patent appellant omitted this claim wholly, and changed the part of the patent which described the operation of the drive wheel, as will appear by comparing original and re-issue.

Original, 1863.

B B′ are two driving wheels adapted to turn on axle C, but each furnished with a pawl H′ on the axle, so as to impart rotation thereto when the wheel is turning forwasd, h^2 represents a spring bearing against the square heel h to hold it either in or out of gear in whichever position it may be set.

Re-issue 1867, 2490.

B B′ are two driving or supporting wheels adapted to turn on the axle c, but each if desired, furnished with a pawl b, taking into a rachet b, on the axle, so as to impart rotation thereto when the wheel is turning forward. B^2 is a spring, bearing against a square wheel of pawl B, to hold it either in or out of gear whichever position it may be set.

The second claim of original 40,481 was as follows:—

Second.—The flange *a*, cast or formed upon the gear frame for the combined purposes of strengthening the latter and protecting the crank-shaft E as hereinbefore explained.

It is not contended that appellees infringed it, and it is wholly omitted from the claim of re-issue 2490.

The third claim of original 40,481 was as follows:—

Third.—The movable tongues K, adapted to be attached to the frame on either side of the wheel B′, and employed to support or raise the inner end of the beam.

It is not contended that appellees infringed the third claim of 40,481. It is wholly omitted from the claims of the re-issue.

The fourth claim is for a device shown in figure 27.

Fourth.—Attaching the shoe to the drag-bar by a transverse swivel-joint to permit the finger-beam to turn its axis to elevate or depress the joints of the fingers, or to fold the beam against the frame for transportation when combined with bracing guides H′ substantially as herein described.

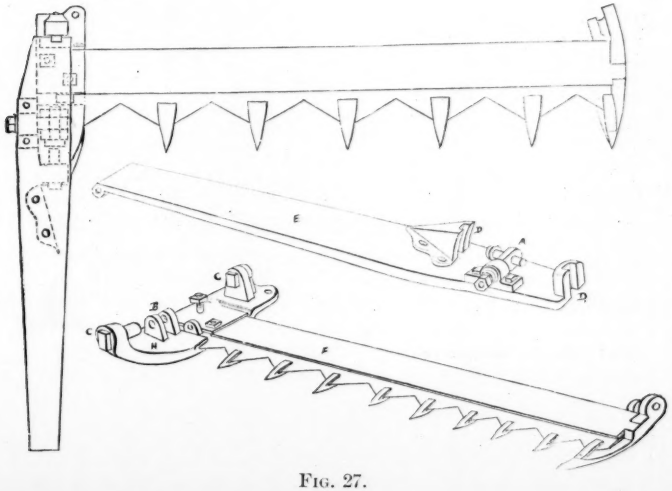


FIG. 27.

It is not contended that appellees infringed this claim. It is not mentioned in the re-issue claims.

In the re-issue 2490 appellant sets forth his invention as embracing four improvements, and his claims correspond therewith. Not one of these improvements is set forth in his original patent, No. 40,481, as being inventions made by him.

The original patent 40,481 embraced the machine when used as a mowing as well as a reaping machine.

Several of the drawings show a mowing machine only. On these drawings which show it as a mowing machine a seat for a driver is shown. In the views of the same machine when converted into a reaper the same seat appears.

No mention is made in the original specification that a man was to sit upon the seat when it was used as a reaper.

The state of the art was that on all machines with rakes having diametrical revolving arms the driver rode on the horses, and when the rakes were removed the driver could sit on the seat and use it as a mower.

The only hint about a driver riding on the machine in the original specification was in connection with the machine when used as a mower, viz.:—

"In mowing, the cutters are left perfectly free, but may be raised or lowered by the operator in the manner already explained, the tongue K being transferred to a position on the outside of wheel B^1."

In the original specification occurs the expression "W is driver's seat." This is all that is said about its position or its uses.

In the original patent nothing was said about the advantage of revolving reel arms turning up. The expression above quoted in the original patent is expanded in the re-issue into the following statement:—

"My first improvement consists in the combination, in a two-wheeled hinged-joint machine, of a driver's seat

mounted upon the main frame, with a raking mechanism mounted upon the finger-beam, and rotating upon a vertical axis, or one nearly so, substantially as hereinafter described, for the purpose of enabling the driver to ride upon the machine while the rake is in operation.

"The rake arms form an angle with the shaft *v*, the inclinations of one arm of each pair being just in a converse direction of the other, so that when one rake or reel arm is over and down close to the platform, the other will be at a very high position on the inner side of the machine. By this means the *rake and reel arms will stand high enough* above the draft-frame, on the inner side of the machine, to move clear of the driver, *who sits upon the machine in a seat W*, which is mounted upon the main frame, *as shown*, or in any other position on the frame, that will give the greatest convenience *and advantage from his weight* and use of his hands in the management of the machine.

"From the foregoing description it will be seen that my invention enables me to combine in a self raking harvester all the advantages derived from the two-wheeled hinged-joint machine, and still use a rake that turns about an axis, or revolves entirely around the same *and at the same* time have the driver or manager ride upon the main draft-frame in such a position *that his weight may aid in counterbalancing the weight of the rake and platform*, and his hands may be conveniently employed for controlling the machine."

Upon this interpolation in the re-issue, the following claims are based, in each of which the features of combined co-operation of the driver's seat and rake are involved:

"1. The combination, in a two-wheeled hinged-joint machine, of a driver's seat mounted upon the main frame, with a raking mechanism mounted upon the finger-beam, and rotating around a vertical axis, or one nearly so, substantially in a manner described, for the purpose of enabling the driver to ride on the machine while the rake is in operation.

"5. The combination of a two-wheeled hinged-joint machine, a revolving raking apparatus, and a driver's seat

mounted on the main frame, substantially as described, and for the purpose set forth.

"9. The combination of a quadrant platform, hinged finger beam, revolving rake, and a driver's seat supported by the main frame."

The appellees are charged with infringing each of these claims.

The testimony of the expert shows that no one could sit upon a seat located as shown in Hoffheins' original patent drawings when the machine was used for reaping, and the rake is in operation.—Eliot.

The testimony shows that on full-sized machines built by Hoffheins like the patent no man could sit upon a seat located as was shown in the Hoffheins drawing.

Smyser—Interrogatories 3, 4 and 8, record page 296, and cross-interrogatories 16 to 19.

Sternbaugh—Interrogatories 3 to 6, record page 297.

Hoff—Interrogatories 7 to 9, record page 298.

Shellenberger—Interrogatories 5 and 6, record page 300.

Christ.—Interrogatories 3 and 4, record page 300.

Enders—Interrogatories 2 to 4, record page 300.

Shireman—Interrogatory 20, page 302; Interrogatory 22, page 302; Interrogatories 2 and 3, page 301; Re-direct 2 and 3, record page 308.

Baum—Interrogatories 11 to 19, page ; Re-direct interrogatory 4, page ; Re-direct interrogatory 9, record page 355.

Z. W. Smyser—Interrogatories 20 to 25, page ; Interrogatories 36 to 39, page ; Interrogatories 43 to 47, record page 360.

APPELLANT'S WITNESSES.

Hoffheins—Cross-interrogatories 251 to 254, page 108; 333-338, page 112.

Boyer—Cross-interrogatory 90, pages 136 and 28.

Sink—Cross-interrogatories 213 to 228, pages 151, 152.
Tlatfelter—Cross-interrogatories 21 to 32, page 202.
Naylor—Cross-interrogatories 108 to 111, page 200.
Shallenberger—Cross-interrogatories 2 to 4, page 200.
Eisenhart—Cross-interrogatories 7 to 12, page 198.
Fink—Cross-interrogatory 246, page 182; 272 to 275, page 184; 323, page 188; 340-341, page 190; 430-433, page 196.
Flory—Cross-interrogatories 81, 82, page 205.

The annexed photographs are copies of photographs of full-size Hoffheins machines, built by him or his partners, showing the relative position of a driver to the rake, upon such a seat as shown in the patent when the rakes were in operation.

Moreover the attempt in the re-issue to interpolate the co-operation between the drivers seat and the rake by suggestions that the driver in his seat balanced the weight of the platform and rakes is shown to be false on its face, inasmuch as the seat in the drawing is on the same side of the axle as the rake and platform attachment, and hence the driver in the seat would overbalance instead of counterbalance. The interpolation of this false statement in the re-issue is as follows:—

"From the foregoing description it will be seen that my invention enables me to combine in a self-raking harvester all the advantages derived from the two-wheeled hinged joint machine and still use a rake that turns about an axis, or revolves entirely around the same *and at the* same time have the driver or manager ride upon the main or draft frame in such position that *his weight may aid in counterbalancing the weight of the rake and platform, and his hands may be conveniently employed for controlling the machine.*"

Hoffheins was no doubt induced to expand his re-issue claims to attempt to monopolize the combination of a re-

volving rake, a hinged bar machine, and a driver's seat, by the fact that on the 3d of December, 1863, Adam R. Reese had applied for a patent, in which application the revolving rakes were brought to a vertical position while passing the frame, and thus afforded a sufficient head space on the platform for a driver to sit. Reese's rake is shown in figure pp., and his patent is shown in Record 422.

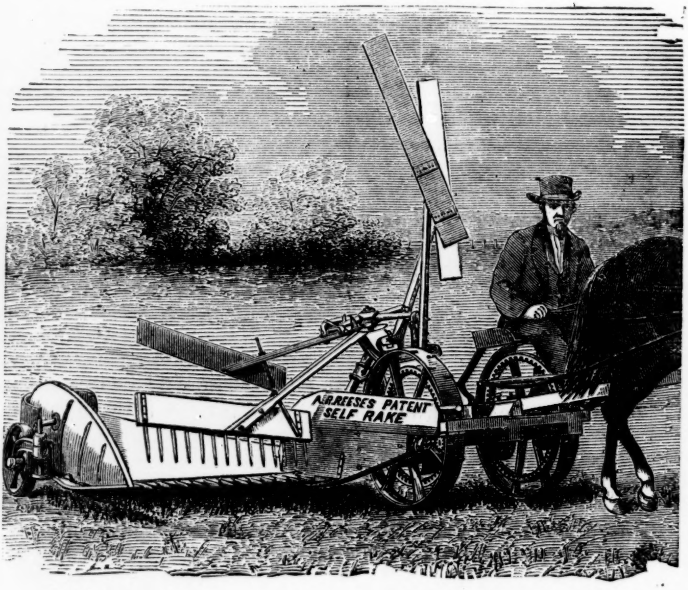


FIG. 28.

In his application filed in 1863 the following clause was contained :—

"By pivoting the rake-arms at a point intermediate between their ends, and operating them by a guide acting upon their inner ends, it will be seen that I obtain an ample space in which to locate the driver's seat. I am likewise enabled to elevate the rake-arms sufficiently to avoid

striking the driver (and even to cause them to revolve without passing over his head), and at the same time use a small cam or guide." * * Record, page 453.

"A seat, N, for the driver, is mounted upon the frame A; when used as a reaper, this seat is located on the front of the frame, near the rear end of the tongue, where, as shown in figure 2 of the drawings, *the driver is out of the way of the rake, and so located as to aid materially in counterbalancing its weight.* When used as a mower, the rake and platform are, of course, removed, and the driver's seat is then shifted to the position shown by the red lines in figure 2, to counterbalance the weight of the tongue."

* * * * * * * * * *

Claim.

"*First.*—The combination, in a two-wheeled, hinge-joint machine, of a driver's seat mounted upon the main frame with a raking mechanism mounted or nearly so upon the finger-beam, and rotating on a vertical axis, or one nearly so, substantially in the manner described, for the purpose of enabling the driver to ride upon the machine while the rake is in operation." * * * Record, page 452.

The examiner in the Patent Office perceiving a seat on the Hoffheins model of 1863, erroneously supposed it to be a reaper's seat and not a mower's seat, only called Hoffheins' attention to this application, and suggested that Hoffheins should apply for a patent for it. Hoffheins did not apply for a patent for it, but undertook to secure a re-issue of his 1862, to secure the location of the rake standard on the finger-beam, and the re-issue of his 1863 patent to secure the combination of a seat on the main frame with a revolving rake and hinged-bar machine.

Another feature of organization was shown on Adam Reese's application, filed in December, 1863, which was described by him as follows:—

"*Second.*—In so combining the finger-beam, main frame, and raking mechanism, that the rake, while free to conform to the undulations of the finger-beam, is at the same time driven from the main frame, *and has its weight supported between the two main wheels of the machine*, whereby the weight is equally distributed between the driving-wheels, and the machine properly balanced." * * *

It was here doubtless that Hoffheins obtained the idea of the importance of transferring the weight of rake and platform to the centre of the machine between the drive-wheels, and so interpolated this feature in his re-issue 2224 and still further in his re-issue 2490.

The first mention of these features of Reese's invention in Hoffheins' re-issued patents was not a mere coincidence.

Adam Reese was examined as a witness, and carries back his date of inventions to the year 1860. See Record, page 325.

The sixth and seventh claims of Hoffheins' re-issue, No. 2490, are as follows:—

"6. I claim driving a revolving rake, or a combined revolving rake and reel, which move about vertical, or nearly vertical, axis, by a device arranged on the grain side of the inner drive-wheel or inner side of the draft frame.

"7. Making a direct driving connection between a revolving rake, or a combined rake and reel, which move about a vertical, or nearly vertical, axis, and the inner end of the main-frame axle of the draft frame."

No claim was made to any such organization or function in the original Hoffheins patent 1863.

The impudence and arrogance of such claims, and their illegality, is apparent on their face as soon as understood. The appellee's mode of driving his rake by a chain and sprocket wheels is as unlike Hoffheins' tumbling joint as anything could be, and yet it is contended that appellee infringes claim 6 & 7, *above cited*, and at the same time infringes the mode of driving by belt in re-issue 2224.

George Harding
Of Counsel for Appellee

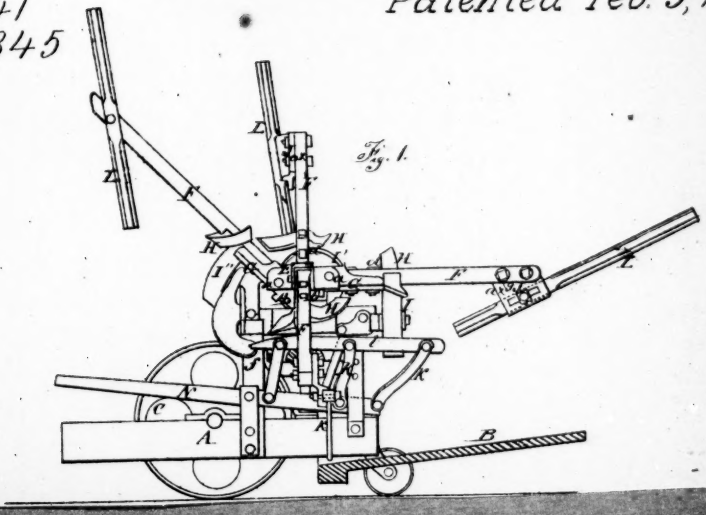
T. S. Whitenack.

Harvester Rake.

Patented Feb. 5, 1861.

No. 341
No. 31345

Fig. 1.



OFFICE SUPREME COURT U. S.
FILED
JAN 4 1883

Supreme Court of the United States.

IN EQUITY.

No. 142.

REUBEN HOFFHEINS,

Appellant,

vs.

C. RUSSELL & CO., CLEMENT RUSSELL, WILLIAM K. MILLER AND JAMES S. TOWNER.

BRIEF FOR APPELLEES.

GEORGE HARDING,
JOHN R. BENNETT,
Counsel for Appellees.

NEW YORK:
EVENING POST JOB PRINTING OFFICE, COR. BROADWAY AND FULTON ST.
(Law Telephone No. 541.)

1882.

Supreme Court of the United States.

No. 142.

REUBEN HOFFHEINS, *Appellant,* *vs.* C. RUSSELL & CO., CLEMENT RUSSELL, WILLIAM K. MILLER AND JAMES S. TONNOR, *Appellees.*	*In Equity.*

Brief for Appellees.

The bill recites the grant to Reuben Hoffheins, appellant, of the following Letters Patent, viz.:

No. 35,315, dated May 20, 1862, for "Improvement in Harvesters;" reissued April 10, 1866, No. 2,224.

No. 40,481, dated Nov. 3, 1863, for "Improvement in Harvesters;" reissued in two divisions, Feb. 28, 1865, No. 1,888, and Nov. 7, 1865, No. 2,102; division No. 2,102—re-reissued Feb. 19, 1867, No. 2,490,

and alleges infringement of the same by the appellees.

Appellant's expert, Renwick, charges appellees with infringing the 1st, 8th, 9th, 11th, 12th, 14th, 16th and 19th claims of

Reissue No. 2,224; and of the 1st, 6th, 7th and 9th claims of Reissue No. 2,490.

Renwick's Deposition, pp. 31 to 52.

The Circuit Court dismissed the bill of complaint, holding:

First.—"That the defendants do not infringe any invention "of which the complainant Reuben Hoffheins was the "original and first inventor, recited in the Reissued Letters "Patent to said Reuben Hoffheins, No. 2,224 and No. 2,490, "respectively."

Second.—"That the said Reissued Letters Patent, No. 2,224, "covers inventions different from those covered by the "original Letters Patent No. 35,315, of which it purports to "be a reissue."

Third.—"That the Reissue Patent No. 2,490 contains an "invention different from that embraced in the original patent "No. 40,481, of which it purports to be a reissue."

and that

"the said reissues No. 2,224 and No. 2,490, respectively, "are, therefore, void."

Decree, pp. 27 and 28.

Appellees contend that the dismissal of the bill of complaint by the Circuit Court, for the reason specified in the decree, was correct.

The prior state of the art is correctly recited and commented upon by appellee's expert, Eliot, in comparing the same with the improvements described and claimed in the said two Hoffheins patents.

Eliot's Deposition, pp. 265 to 285.

When properly construed, appellees do not infringe any of the claims of Reissue No. 2,224.

Eliot's Deposition, pp. 248 to 257.

Appellees' machine does not contain any invention that was described and claimed in the Hoffheins original patent No. 35,315, of which No. 2,224 is a reissue.

Eliot's Deposition, pp. 242 to 256.

APPELLANT'S REISSUE 2,224 ILLEGALLY GRANTED, AND THEREFORE VOID.

(*a.*) There existed no legal cause for the surrender and reissue of the Hoffheins original patent 35,315, as the same was neither inoperative or invalid by reason of a defective or insufficient specification, or by reason of the appellants' claiming more than he had a right to claim as new—the only legal reasons for which the patent could have been surrendered and reissued.

(*b.*) The Hoffheins original patent 35,315, contained an accurate and full description of the appellees' invention, and was a valid and operative patent to the extent of its several claims, and the claims thereof were co-extensive with the invention shown and described.

(*c.*) Appellees' Reissue 2,224 was not surrendered and reissued until three years and ten months from and after the date of the original patent, and after the grant of Letters Patent to others, for separate and independent inventions, under and in accordance with which appellees' machine was constructed, and with a view to covering such subsequent, distinct and independent inventions.

(*d.*) The appellant, if he was the inventor of the features claimed in and by the claims of said reissue 2,224, and if he ever had the legal right to surrender and Reissue for the purpose of claiming the same. forfeited all right so to do by his long delay, and thereby abandoned and dedicated the same to the public.

(*e.*) Reissue 2,224 contains a description of features and inventions entirely different and distinct from those described and claimed in and by said original patent 35,315, as appears from a comparison of the said original and reissued Letters Patent. The differences between the said original and reissued Letters Patent are fully pointed out by appellee's expert, Eliot.

Eliot's Deposition, Int. 5 and 6, pp. 242 to 248.

Appellees' machine does not contain any of the features described and claimed in the Hoffheins' original patent, 40,481, and would not have infringed any of the claims thereof.

When properly construed, appellee's machine does not infringe any of the claims of Reissue 2,490.

Elliott's deposition, Interrogatories 25, 29, 31, 33, pp. 259 to 264.

APPELLANT'S REISSUE 2,490 ILLEGALLY GRANTED, AND THEREFORE VOID.

(*a.*) Appellant's original patent, 40,481, of which 2,490 is a reissue, contained a full and accurate description of appellant's invention, without any ambiguity or uncertainty, and the same was clearly and distinctly pointed out and claimed in the several claims thereof, and was neither inoperative or invalid by reason of a defective or insufficient specification, or by reason of the appellant's claiming more than he had a right to claim as his own invention.

(*b.*) There existed no legal cause for the surrender and reissue of appellant's original patent, 40,481.

(*c.*) The only purpose of surrendering and reissuing said original patent was to extend and generalize the claims so as to make them embrace other and subsequent inventions not set forth in the said original patent; and Reissue 2,490 does so contain expanded and generalized claims which embrace inventions other than those set forth in said original patent.

(*d.*) A comparison of the original and reissued patent shows that Reissue 2,490 contains interpolations of and claims for subject-matter different from that contained in appellant's original patent, 40,481; these differences are clearly pointed out by appellees' expert, Elliott.

Elliott's Deft. Int. 23, pp. 257–258.

Appellant's Reissue 2,490 was not granted until more than three years from and after the date of his original patent, of which it is a reissue, and until after the grant of

subsequent patents, under which appellees' machine was constructed, viz.: Patent to Samuel Johnston, No. 46,300, Feb'y 7, 1865; Adam R. Reis, May 1, 1866, No. 54,406, and others.

The use of combined machines for both mowing and reaping, in which the driver could sit on the machine during the operation of mowing, &c., was well known prior to the date of the appellant's original patents.

In a machine constructed according to Reissue No. 2,490, it would be impossible for a man to sit on the seat while the rakes were in operation, and no one ever did do so.

APPELLANT'S WITNESSES.

Hoffheins—

Cross-Interrogatories 251 to 254, page 108.
" " 333–338, page 112.

Boyer—

Cross-Interrogatory 90, page 136

Sink—

Cross-Interrogatory, 214 to 228, pages 151, 152.

Teatfelter—

Cross-Interrogatories 21 to 32, page

Naylor—

Cross-Interrogatories 108 to 111, page

Shallenberger—

Cross-Interrogatories, 2 to 4, page

Eisenhart—

Cross-Interrogatories 7 to 12, page

Fink—

Cross-Interrogatory 246, page 182.
" " 272 to 275, page 184.
" " 323, page 188.
" " 340–341, page 190.
" " 430–433, page 196.

Flory—

Cross-Interrogatories 81, 82, page

Heilman—

Cross-Interrogatories 34 to 41, page
" " 105 to 107, page
" " 110, 111, page

Link—

Cross-Interrogatories 73 to 88, page

Even were it possible for the driver to occupy the seat, located as shown in the drawings of Reissue 2490, and in the original Patent Office model, while the rakes were in operation, his weight, as stated in the specification, would not "aid " in counterbalancing the weight of the rake and platform," but add to the weight. The statement is false, and was fraudulently interpolated into the reissued specification.

The seat "*W*," shown and described in Reissue No. 2,490, can be used only when the machine is used as a mover, and not as a reaper, and was so intended.

Hoffhein's Cross-Interrogatories 333 to 337, p. 114.

The use of a double-hinged or flexible bar in combined reaping and mowing machines, on which the driver could sit during the operation of the machine, was well known prior to the date of Hoffeins' original patent.

The use of a flexible hinged bar machine for mowing, which could be suspended during the operation of reaping, was known prior to the date of Hoffheins' patent.

Brown's patent of 1861, p. 386.
Brown's patent of 1863, p. 364.
Ball's patent of 1857, p. 400.
Willard & Ross' patent of 1857, p. 407, and the testimony of Rob't Brown, p.

The use of revolving rakes, so arranged as to rise out of the way of the driver, was well known prior to the date of Hoffheins' original patent of 1863.

Whitenack's patent of 1861, p. 422; Brown's patent of 1861, p. 386; Lewis Reese's patent of 1860, p. 384; Brown's machine, see Testimony of Brown, p. ; James S. Marsh's patent of 1863, p. 430.

The invention described in Reissued Letters Patent No. 2,490 was in public use, by and with the knowledge, consent and allowance of the appellant, for more than two years prior to his application for his original Letters Patent.

See testimony of Hoffheins' and others.

LEGAL AUTHORITIES ON SURRENDER AND REISSUE.

Gill *vs.* Wells, 22 Wall, 1.

Russell *vs.* Dodge; 3 Otto, 464.

Powder Company *vs.* Powder Works; 8 Otto, 126.

Miller *vs.* Brass Company; 14 Otto, 350.

James *vs.* Campbell, 14 Otto, 356.

Heald *vs.* Rice, 14 Otto, 737.

Banty *vs.* Banty, not yet reported.

Matthews *vs.* Boston Machine Company; 21 Official Gazette, 1349.

Moffitt *vs.* Rogers. Decided at present term Supreme Court. Not yet reported.

Giant Powder Company *vs.* California Powder Company, 4 Federal Reporter, 720.

Geo. Harding

17-132

OFFICE SUPREME COURT U.S.
FILED
JAN 4 1883

Supreme Court of the United States.

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No. 142.

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C. RUSSELL & CO., CLEMENT RUSSELL, WILLIAM K. MILLER AND JAMES S. TOWNER.

BRIEF FOR APPELLEES.

GEORGE HARDING,
JOHN R. BENNETT,
Counsel for Appellees.

NEW YORK:
EVENING POST JOB PRINTING OFFICE, 208 BROADWAY, COR. FULTON ST.
(Law Telephone 541.)

1883.

Supreme Court of the United States.

No. 142.

EUGENE HOFFHEINS,
Appellant,

vs.

C. RUSSELL & CO., CLEMENT RUSSELL, WILLIAM K. MILLER AND JAMES S. TONNOR,
Appellees.

In Equity.

Brief for Appellees.

The bill recites the grant to Reuben Hoffheins, appellant, of the following Letters Patent, viz.:

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No. 40,481, dated Nov. 3, 1863, for "Improvement in Harvesters;" reissued in two divisions, Feb. 28, 1865, No. 1,888, and Nov. 7, 1865, No. 2,102; division No. 2,102—reissued Feb. 19, 1867, No. 2,490,

and alleges infringement of the same by the appellees.

Appellant's expert, Renwick, charges appellees with infringing the 1st, 8th, 9th, 11th, 12th, 14th, 16th and 19th claims of Reissue No. 2,224; and of the 1st, 6th, 7th and 9th claims of Reissue No. 2,490.

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The Circuit Court dismissed the bill of complaint, holding:

First.—"That the defendants do not infringe any invention "of which the complainant Reuben Hoffheins was the original "and first inventor, recited in the Reissued Letters Patent "to said Reuben Hoffheins, No. 2,224 and No. 2,490, respec- "tively."

Second.—"That the said Reissued Letters Patent, No. 2,224, "covers inventions different from those covered by the "original Letters Patent No. 35,315, of which it purports to be "a reissue."

Third.—"That the Reissue Patent No. 2,490 contains an "invention different from that embraced in the original patent "No. 40,481, of which it purports to be a reissue."

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"the said reissues No. 2,224 and No. 2,490, respectively, are, "therefore, void."

Decree, pp. 27 and 28.

Appellees contend that the dismissal of the bill of complaint by the Circuit Court, for the reason specified in the decree, was correct.

The prior state of the art is correctly recited and commented upon by appellee's expert, Eliot, in comparing the same with the improvements described and claimed in the said two Hoffheins patents.

Eliot, pp. 265 to 285.

Hoffheins' Patent of 1862, No. 35,315.

This patent embraced three features: 1, the peculiar construction of the reel and rake; 2, the peculiar form and loca-

tion of the rake post; 3, the peculiar manner of operating the rakes; the novelty consisted in the peculiarity of each of those features, and each was made the subject of a separate claim, there being but three claims in the original patent.

The peculiar construction and operation of the reel and rake referred to, is very specifically described in the specification, and pointed out in the drawing and again recited in the first claim, and was, we believe, original with Hoffheins.

The form and location of the rake post is described as a "post rigidly secured to the inner end of the platform and in- "clining over the rear of the main frame," and again, "the "standard or post I being rigidly mounted upon the platform, "and inclining over the back of the main frame;" and the second claim specifically recites and claims "The inclined standard I, rigidly mounted upon a loosely hinged platform."

The drawings show the *inclined* rake post mounted upon the *platform*, and all machines constructed by Hoffheins had that form and location of the rake post; the inclined rake post was an essential and vital part of the Hoffheins organization, and could not have been dispensed with.

So also with his peculiar manner of operating his reel and rake, which was by an endless band and a series of pulleys, and a yielding swiveled rod, as specified in the third claim; his arrangement of the band, pulleys and yielding swiveled rod, and the manner of operating the rake thereby, is fully described and shown, and no other means are shown, described or even suggested.

No mention or reference whatever is made in the specification to a "finger beam," nor is any shown or indicated in the drawings; neither is a "hinged joint," or "jointed cutting apparatus" mentioned or referred to; the only mention of the cutting apparatus is, "The cutting apparatus is not repre- "sented, and may be constructed and operated in any suita- "ble manner."

The inclined rake post was located upon the platform, and no mention or intimation whatever was given that it could, or might be placed upon the "finger beam" or "jointed cutting

apparatus;" had it been so intended the "finger beam" or "jointed cutting apparatus" would at least have been described and shown.

The means of suspension by which the inner end of the platform is suspended is "a link," and the point of suspension upon the main frame, though not mentioned, is shown to be on a line with the left hand face of the inner drive wheel.

No mention is made of *a chain* or of the point of suspension being to the *right of the left hand drive wheel*, or *between* the two drive wheels.

Appellees' machine does not contain any invention that was described and claimed in the Hoffheins original patent No. 35,315, of which No. 2,224 is a reissue, and would not have infringed any of its claims.

Eliot, pp. 242 to 256.

When properly construed, appellees machine does not infringe any of the claims of Reissue No. 2,224.

Eliot, pp. 248 to 257.

Appellee's rake is totally different and distinct from the Hoffheins rake, both in principle, construction and mode of operation; each arm is separate and moves independently of each of the other arms, and without reference to the path pursued by the others, and by a peculiar arrangement of cams the rake arms pass up and by the driver and to the side of the platform, or main frame, and not over the platform or main frame; in no sense do the rake arms in appellee's machine "sweep the platform from the front to inner side."

Appellee's machine does *not* contain; 1st. An inclined rake post; 2d. An inclined rake post rigidly mounted upon the platform; 3d. A rake post of any kind, mounted upon the platform; 4th. An inclined rake post mounted upon a "jointed cutting apparatus;" 5th. An endless belt; 6th. A yielding belt tightener.

Appellee's machine has (1) a straight rake post mounted upon the shoe or inner end of the finger beam and suspended

by a chain upon the main frame at a point between the drive-wheels ; (2) a sprocket wheel and chain for driving the rakes and (3) a yielding guide pulley for guiding the chain.

APPELLANT'S REISSUE 2,224 ILLEGALLY GRANTED, AND THEREFORE VOID.

(*a.*) There existed no legal cause for the surrender and reissue of the Hoffheins original patent 35,315, as the same was neither inoperative or invalid by reason of a defective or insufficient specification, or by reason of the appellant's claiming more than he had a right to claim as new—the only legal reasons for which the patent could have been surrendered and reissued.

(*b.*) The Hoffheins original patent 35,315, contained an accurate and full description of the appellees invention, and was a valid and operative patent to the extent of its several claims, and the claims thereof were co-extensive with the invention shown and described.

(*c.*) Appellees' Reissue 2,224 was not surrendered and reissued until three years and ten months from and after the date of the original patent, and after the grant of Letters Patent to others, for separate and independent inventions, under and in accordance with which appellees' machine was constructed, and with a view to covering such subsequent, distinct and independent inventions.

(*d.*) The appellant, if he was the inventor of the features claimed in and by the claims of said reissue 2,224, and if he ever had the legal right to surrender and Reissue for the purpose of claiming the same, forfeited all right so to do by his long delay, and thereby abandoned and dedicated the same to the public.

(*e.*) Reissue 2 224 contains a description of features and inventions entirely different and distinct from those described and claimed in and by said original patent 35,314, as appears from a comparison of the said original and reissued Letters

Patent. The difference between the said original and reissued Letters Patent are fully pointed out by appellee's expert Eliot.

Eliot's, Int. 5 and 6, pp. 242 to 248.

The drawings of the reissue have been changed, so as (1) to show a finger beam, and (2) to change the point of suspension towards the centre of the main frame for fraudulent and deceptive purposes.

The "finger beam" and the "hinged joint cutting apparatus" have been bodily interpolated into the reissue, and the new claims of the reissue based entirely upon such interpolations.

The three claims of the original patent are, by careful comparison, to be found in the reissue, viz.: 2d, 5th and 18th, but appellant does not charge infringement of those claims, and, in fact, the appellee's machine does not infringe them.

DATE OF HOFFHEINS' INVENTION, PATENTED MAY 20, 1862, No. 35,317.

In the fall of 1859—October—Hoffheins received his *first* "Ball" combined machine, intended as a sample machine, and sometime thereafter the patterns from which to build the machines. From that sample machine and the patterns he built the "Ball" machine—between 30 and 40—for the harvest of 1860 (Hoffheins, Int. 7, 8, p. 75; Cross-Int. 121–125).

As a combined machine they failed (Hoffheins, Int. 8, p. 75). On August 20, 1860, and immediately after the harvest of 1860—his "Ball" combined machine having failed—he applied to Owen Dorsey for license to manufacture the "Dorsey" sweep rake, which was refused (Record, pp. 100, 101). Having failed to obtain the right to build the "Dorsey" rake, he modified or changed his "Ball" machine of 1860, and so changed, continued to build the "Ball" for the harvest of 1861 (Hoffheins, Int. 9, p. 75; Int. 137–140, p. 99), building from 30 to 40. In the fall of 1860, after failing to get the right to build the "Dorsey," he commenced experimenting. Prior to that time, according to his account, all he had done was to state to Leonard—a total stranger whom he met by chance at a fair in Philadelphia—that he had an idea of, or intended

trying to adapt a sweep rake to the "Ball" machine, and subsequently tried what he calls his "nail-keg" experiment, neither of which amounted even to a conception of his invention in question (Int. 27, p. 79; Int. 35, 36, p. 80.)

His actual experiments commenced in the fall of 1860, and continued during that fall and winter, and during the winter of 1860 and 1861 he constructed his first machine, which was, completed and tried in green rye in June, 1861, his own recollection being that "the first machine that was completed, or nearly completed, was the beginning of 1861" (Int. 38, p. 8, cross-Int. 195 and 197, p. 104). There is no positive testimony, however, that the machine was completed until just prior to the trial in the green rye, and that it was not completed until then, is clearly shown by the testimony of several witnesses.

No drawings of his invention were made.

His first model "was made or commenced the latter part of 1860, or beginning of 1861" (Hoffheins, Int. 49, p. 87). Other than this there is no testimony as to the construction of a model prior to June, 1861. None of the witnesses called by appellant have any knowledge of any drawings, model, or completed machine prior to April or May, 1861 (Cross-Int. 37, p. 132; Int. 7, p. 137; Int. 7, p. 161, Int. 2, p. 205.)

He constructed six or eight of his machines for the harvest of 1861 (Int. 37, p. 8), all of which proved a failure and were returned to him or taken back (Int. 63, 64, p. 91). The machines for the harvest of 1861 were wooden frame machines, and the rakes were driven by a "sliding tumbling shaft," as shown in Complainant's Exhibit No. 61.

After the harvest of 1861, all of those first machines were remodeled and the rake-driving mechanism entirely changed, and in that condition returned or put out by Hoffheins for the harvest of 1862. The rake driving mechanism used was that shown and described in his patent of 1862, and the subject of the third claim thereof (Int. 65, 66, 67 and 68, p. 91). His machine of the harvest of 1861 was abandoned by him and never patented (Cross-Int. 361, p. 116).

The date of his invention, so far as relates to the form and location of the rake post, is, at the earliest, the winter of 1860-'61. The date of the invention as a whole, viz.: the form and location of the post, and the rake-driving mechanism

which formed the subject-matter of the Hoffheins patent of 1862, *is the summer and fall of* 1861. The machine, as a whole, shown and described in the Hoffheins patent of 1862, is his machine as reconstructed and put out by him for the harvest of 1862, and it was after he had reconstructed his machine that he filed the application for his patent of 1861,

Leonard on whom appellant mainly relys, had no knowledge of the date of his invention, prior to receiving one of the machines in June, 1861. True, he relates a conversation had with Hoffheins in the fall of 1859, at a fair in Philadelphia, to the effect that Hoffheins informed him of his intention to put a self-rake upon the Ball machine; it was, however, but an abstract idea, for Hoffheins testifies that at that time he had made no experiments whatever, and his conception of the invention, if any, consisted merely in his intention to do a certain thing, viz.: to try to place a self-rake upon the Ball machine. In the early winter of 1860, Leonard became agent for Hoffheins for the sale of his Ball machine, which Hoffheins was then building, for the harvest of 1860 (Int. 20-21, p. 78). And the letters of Leonard to Hoffheins prior to the harvest of 1860, undoubtedly refer to those machines, as at that time Leonard had no knowledge, and had not seen the style of Ball machine Hoffheins was building. Leonard in his letter of May 19, 1860, called Hoffheins' attention to the "self-rakes" then being introduced by others, and enquires, "Did you ever look "at the Dorsey raker," which contradicts the idea of the alleged conversation between Hoffheins and Leonard in the fall of 1859, for, if as testified to by Leonard, Hoffheins and himself did examine the Dorsey rake, and talked about it at the fair in 1859, why this inquiry in May, 1860?

(Cross-Int. 54, p. 212; Cross-Int. 123, p. 217,)

If Hoffheins did describe or explain what he alleges to be his invention to Leonard, in the fall of 1859, it is quite evident from Leonard's subsequent letters, that he did not understand it, and had no intelligent idea of it, or why his repeated inquiry in his subsequent letters to have Hoffheins explain it to him?

On June 1st, about the time Leonard received the first Ball machine from Hoffheins, the inquiries ceased, and the next

letter produced was not written until the following winter, December 1, 1860 (Record, pp. 77-8).

Hoffheins letters to Leonard during the period from January to June, 1860, are not produced.

Subsequent correspondence between these parties show that Hoffheins, as late as February 22, 1861, had nothing perfect, for on that day he wrote Leonard: "I think I have "the best and simplest rake in use, which I will have per- "fected by the 1st of April." In reply to which, on February 28, 1861, Leonard inquired: "I want you to tell me whose "patent the rake is, and I want you to make it as soon "as possible" (p. 81). Also, "Is your raker run by a "crank or drawn by a wheel." And on April 15, 1861, Hoffheins wrote Leonard, "I have but two finished with "rakes on, one was sent to Cumberland, and the other is not "quite finished," referring, of course, to the machines Hoffheins built and tried in the harvest of 1861 (p. 82).

Appellant derives no support from his witness Leonard in fixing the date of his invention, and it only tends to confirm the correctness of the date of Hoffheins' invention, as fixed by the appellees, as the summer and fall of 1862.

Neither the patent of 1862, nor any subsequent patents of Hoffheins, shows or describes the machine constructed by him in the winter of 1860-'61 for the harvest of 1861.

The machines for the harvest of 1862 had a seat for the driver when used as a mower, but not when used as a reaper, and Hoffheins admits that the driver could not ride upon the 1862 machines when the rake *was* in operation, and was never so intended (Int. 75, p. 92).

Hoffheins Reissue 2,224, fully anticipated by Patent 32,556, granted Robert Brown June 18, 1861 (Brown patent, p. 381).

A clear and comprehensive comparison of the two patents is made by appellee's expert Eliot, showing the identity between the two patents (Int. 53, p. 280).

The combined machines built by Robert Brown in the summer, fall, and winter of 1860, anticipates the Hoffheins Reissue 2,224 (Eliot, p. 283, Int. 55, 56).

The construction and operation of such machines is fully

described by Brown, and shown by the Exhibit Models "Brown No. 2," "Brown No. 3," and "Miller machine."

Brown, p. 311, Int. 15–23.

The first Brown combined machine—wooden frame—was completed in September, 1860, and operated and exhibited during that fall; also a double iron framed machine—Exhibit Miller—one of which was sold April 3, 1861 (Brown, p. 311, Int. 13–15; Miller, p. 342–44, Int. 3, 6, 21).

The double framed combined machines built by Robert Brown in 1860—the winter of 1860 and '61—consisted of a two-wheeled machine, having a quadrant shaped platform, finger beam, and cutting apparatus, attached to the main frame by a hinged joint connection, with a sweep raking and reeling apparatus mounted upon the inner or extended end of the finger beam, so that the rake or reel arms would conform to the surface of the platform independent of the main frame. The rake, finger beam and platform were rigidly connected together, and the inner end suspended upon the main frame by a hook and chain, when the machine was used as a reaper; the raking apparatus was arranged in the rear of the main frame, and between the drive or supporting wheels, and between the point of suspension and the outer divider.

Eliot, Int. 55–56, pp. 283–4.
Brown, Int. 15–19, p. 311.

The operation of the Brown double frame combined machine—iron frame—was precisely the same as the Hoffheins machine, and for the same purpose. There was a seat for the driver when the machine was used as a mower, but no seat that was intended to be occupied during the operation of reaping. The differences between appellee's machine and the Hoffheins machine, are far greater and more distinct than between the Brown and the Hoffheins machines.

HOFFHEINS' PATENT OF NOV. 3, 1863.

This patent was for improvements upon the Hoffheins patent of 1862, which improvements consisted: 1. In an iron frame cast in one piece. 2. In casting a flange upon the underside of the main frame for the purpose of imparting strength to the frame

and protecting the crank shaft. 3. In a movable tongue, to permit of its being changed to different positions when used as a mower or as a reaper. 4. In attaching the shoe to the drag bar in a peculiar manner, viz.: by a transverse swiveled joint, to allow the fingers to be either elevated or depressed: and each of these features formed the subject matter of a separate claim, and was specifically claimed in and by the four claims of the patent. The main feature, however, was the iron frame cast in one piece. The form and location of the rake post was the same as in the 1862 patent, viz.: an inclined rake post mounted upon the platform; and the inner end of the platform was suspended upon the main frame in substantially the same way, *i. e.*, by a bracket and chain (Patent, p. 381).

That Hoffheins knew the difference between the "finger beam" and "platform," and intended to mount his *inclined* rake post upon the platform, and not upon the *finger beam*, is evident from the following statement of the specification:

"On the inner side of the grain platform near the heel of "the finger beam, is firmly mounted a post *R*, which may be "inclined over towards the main frame, as shown in Fig. 1."

Appellee's machine has not an iron frame cast in one piece, it is a *wooden frame* machine; nor has it an inclined rake post mounted upon the platform near the heel of the finger beam, or a movable tongue, or a shoe attached to the drag bar by a transverse swivel joint. It has a moveable seat which is used both for mowing and reaping.

The only mention made of a seat is, "*W* represents the driver's seat," and the drawings show the seat located back of the axle, the same as in the "Ball" machine, when used as a mower. No provisions were made for locating the seat elsewhere, nor could it have been differently located on the iron frame machine described and shown in the drawing of the 1863 patent.

Appellee's machine does not contain any of the features described and claimed in the Hoffheins' original patent, 40,481, and would not have infringed any of the claims thereof.

When properly construed, appellee's machine does not infringe any of the claims of Reissue 2,490.

Eliot, Ints. 25, 29, 31, 33, pp. 259 to 264.

The organization and operation of the two rakes are essentially different and distinct. In appellee's machine the organization and operation is such that the driver is enabled to ride upon the machine while the rake is in operation, owing to the rake arms passing up and to the side of the main frame, upon which the seat is located, while in appellant's machine it is such that the rakes sweep over the entire platform upon which the seat is located, and the driver, if it is at all possible, which is denied, would only enabled to ride upon the machine while the rake is in operation, owing to the extreme heighth of the rake post, causing the rakes to pass over the driver's head.

If appellant's construction of rake was placed upon appellee's machine, it would be utterly impossible for the driver to occupy the seat while the rake was in operation.

APPELLANTS' REISSUE 2,490 ILLEGALLY GRANTED, AND THEREFORE VOID.

(*a.*) Appellant's original patent, 40,481, of which 2,490 is a reissue, contained a full and accurate description of appellant's invention, without any ambiguity or uncertainty, and the same was clearly and distinctly pointed out and claimed in the several claims thereof, and was neither inoperative or invalid by reason of a defective or insufficient specification, or by reason of the appellant's claiming more than he had a right to claim as his own invention.

(*b.*) There existed no legal cause for the surrender and reissue of appellant's original patent, 40,481.

(*c.*) The only purpose of surrendering and reissuing said original patent was to extend and generalize the claims so as to make them embrace other and subsequent inventions not set forth in the said original patent; and Reissue 2,490 does so contain expanded and generalized claims which embrace inventions other than those set forth in said original patent.

(*d.*) A comparison of the original and reissued patent shows that Reissue 2,490 contains interpolations of and claims for

subject-matter different from that contained in appellant's original patent, 40,481; these differences are clearly pointed out by appellees' expert, Elliott.

Elliott's Deft. Int. 23, pp. 257–258.

(*e.*) Appellant's Reissue 2,480 was not granted until more than three years from and after the date of his original patent, of which it is a reissue, and until after the grant of subsequent patents, under which appellee's machine was constructed, viz.: Patent to Samuel Johnston, No. 46,300, Feb'y 7, 1865; Adam R. Rees, May 1, 1866, No. 34,406, and others.

In a machine constructed according to Reissue No. 2,490, it would be utterly impossible for a man to sit on the seat while the rake was in operation, and no one ever did so; this is testified to by every witness called both by the appellant and appellees as to the Hoffhein's machines.

Appellant's Witnesses—Hoffheins' x-Int. 251–254, p. 108; x-Int. 335–38, p. 112; Boyer, x-Int. 90, p. 136; Sint x-Int. 214–228, p. 151–52; Glatfelter, x-Ints. 21–32, p. ; Naylor, x-Ints. 108–111, p. ; Shallenberger, x-Ints. 2–4, p. ; Eisenhart, x-Ints. 7–12, p. ; Firix, x-Int. 246, p. 182, 272–275, p. 184, 223, p. 188, 340–41, p. 190, 430–433, p. 196; Flory, x-Int. 81–2, p. ; Heilman, x-Int. 34–40, p. , 105–7, p. 110–11, p. ; Lind, x-Int. 73–88, p. ; Leonard, x-Int. 174–179, p. 220. Appellee's witnesses—Smyser, Int. 3, 4, 8, p. 296; Sternbaugh, Int. 3, 6, p. 297; Hoff, Int. 7–9, p. 298; Shellenberger, Int. 5–6, p. 300; Chust, Int. 3–4, p. 300; Enders, Int. 2–4, p. 300; Sherman, Int. 20, 22, 23, 29 and 30, p. 302; Int. 2–3, p. 308; Baum, Int. 11–19, p. 354 Re-Int. 4, 9, p. 357; Smyser, D. L., x-Int. 16–19, p. 358; Smyser, 2, W. Int. 20–25, p. 361, 36–39, 43–47, p. 361.

Even were it possible for the driver to occupy the seat, located, as shown in the drawings of Reissue 2,490, and in the original Patent Office model, while the rakes were in operation, his weight, as stated in the specification, would not "aid in "counterbalancing the weight of the rake and platform," but add to the weight. The statement is false, and was fraudulently interpolated into the reissued specification.

The seat "*W*," shown and described in Reissue No. 2,490, is a mower's seat, and can only be occupied when the machine is used as a mower, but not as a reaper, and was ever so intended. Hoffheins' x-Int. 333 to 336, p. 114; Leonard, x-Int. 174, p. 220.

It is of no consequence to the Hoffheins patent of 1863, or its reissue 2,490, whether the driver could or did occupy a seat, located at some extreme outer end of the frame, on the 1861 machines, while the rake was in operation, as that is not the machine shown and described in the patent, and for which he obtained his patent of 1863.

The claims of the original patent have been entirely omitted from the reissue, and the new claims are based entirely upon interpolations embodied in the reissue, for which there was not the least warrant or authority, is to be found in the original patent. Nothing, whatever, was said in the original patent as to a seat for the driver in reaping, or that the machine was so organized as to "enable the driver to ride on the machine while the rake is in operation," and yet it is upon that that the reissue is founded.

The machine was not so organized and arranged as to enable "the driver to ride on the machine while the rake was in operation.

On December 3d, 1863, Adam R. Reise filed an application for a patent containing a claim substantially the same as the first claim of reissue 2,490; upon an examination of that application, the Patent Office found on the Hoffhein's model of 1863, a seat located back of the axle—as shown in the drawing—and, therefore, notified him on February 24th, 1864, that his application was anticipated by the patent of Hoffhein's, and that "Hoffheins has been notified that if he desired "to contest the question of priority with you," (him) "he "must file an application for a patent for the alleged improve- "ment, within two months from this date" (p. 457). February 24, 1864, the office accordingly notified Hoffheins of Resse' application, stating "an application has been made to this "office for a patent for an alleged improvement in harvesters,

" which is shown but not claimed in the patent granted to " you November 3d, 1863. If you wish to contest the question " of priority of said invention it will be necessary for you to " file an application presenting said claim, within two months " from this date, otherwise said application will be considered " without reference to your patent aforesaid " [p. 15-16.]. In response to which Hoffheins filed an application for *reissue* of his 1863 patents, instead of "filing *an application for a patent*" covering those features.

In that interference controversy, unaccountably, no such point was raised as that the Hoffheins machine-patent of 1863, was not so organized as to permit that drawer to ride upon the machine when the rakes were in operation; and was never so intended; this is not disputed. The proof taken by Hoffhein at that time referred to his 1861 machine, and not to his 1863 iron frame machine upon which his original patent was based.

If his machines for the harvest of 1861 were so constructed as to enable the driver to occupy the seat while the rake was in operation, he should, as called for by the Patent Office, have filed an application for a patent based upon that machine, and not endeavored, as he did, to illegally secure it by a reissue of his 1863 patent, by interpolating into it that which did not exist, and of which it was not susceptible.

Upon that application he obtained a reissue November 7, 1865, No. 2,102, which reissue was subsequently surrendered, and instead thereof the present reissue 2,490 issued to him.

It is not his machine of 1863, nor the machine for which he obtained his 1863 patent, but his machine for the harvest of 1861, that he now contends was organized and constructed, that the driver could ride on the machine while the rake was in operation, and in fact it is upon that machine which he interpolated into his 1863 patent, that the present reissue was based and asked for, and not upon his machine and patent of 1863, of which 2490 purports to be a reissue.

The inquiry is not whether Hoffheins invented that feature, but whether it was the invention patented to him in and by his patent of November 7, 1862, and this must be answered in the negative.

The use of combined machines for both mowing and reaping, in which the driver could sit on the machine during the

operation of mowing, &c., was well known prior to the date of the appellant's original patents.

The use of the double-hinged or flexible bar in combined reaping and mowing machines, on which the driver could sit during the operation of the machine, was well known prior to the date of Hoffheins' original patent.

The use of a flexible-hinfied bar machine for mowing, which could be suspended during the operation of reaping, was known prior to the date of Hoffheins' patent.

Brown's patent of 1861, p. 386.
Brown's patent of 1863, p. 364.
Ball's patent of 1857, p. 400.
Willard & Ross' patent of 1857, p. 407, and the testimony of Rob't Brown.

The use of revolving rakes, so arranged as to rise out of the way of the driver, was well known prior to the date of Hoffheins' original patent of 1863.

Whitenack's patent of 1861, p. 422.
Lewis Reese's patent of 1860, p. 384.
Brown's patent of 1861, p. 386.
Brown's machine, see testimony of Brown.
James S. Marsh's patent of 1863, p. 430.

The date of Hoffheins invention for which he obtained his patent of November 3, 1867, is the late summer of 1863. Hoffheins admits that his first iron-frame machine—the machine for which he obtained his 1863' patent—was constructed during the harvest and late summer of 1863, and that he built but two of such machines in all (Int. 435, p. 123; Ints. 78–79, p. 92-3).

The date of the construction of his first iron-frame machine is testified to by other witnesses as being "after the harvest of 1863" (Int. 60, p. 166).

Hoffheins does not pretend that the driver could ride on the 1863 iron-frame machine while the rake was operated, for in answer to Cross-Int. 417, page 121, he would not testify that such was even possible; that it was impossible is testified to by other witnesses (Int. 271–275, p. 184).

It was immediately after he had completed his iron-frame

machine that he made application for the patent of November 7, 1863, subsequently granted to him.

Hoftheins Reissue 2,490, anticipated by the Brown patents of June 18, 1861, No. 32,556 and October 29, 1863, No. 40,395, and the Brown machines of 1860, 1861, 1862 and 1863.

Patents, p. 364, p. 386; Eliot, p. 280–284.

Brown machines of 1860–61, above recited contain all the features of the Hoffheins Reissue 2,490, excepting a seat for the driver in reaping. In the winter of 1862–3, Brown placed a seat on his machine for the driver in reaping, and so changed and modified his raking apparatus, that the rakes passed up and by the driver, allowing him to occupy the seat in reaping. (Brown Int, 28–34, p.).

The Brown machine of the winter of 1862–63, the first of which was tried in the harvest of 1863, was so organized and constructed that the driver could and did occupy a seat on the machine in reaping, and it was so intended, and thereafter all Brown's machines were so constructed. (See above.)

The Hoffheins machine—Reissue, 2,490—was not so organized and constructed that the driver could occupy the seat in reaping, and it was never so intended.

BROWN THE PRIOR INVENTOR.

As already stated Brown made his first model in the winter of 1859-60, completed his first full-sized machine—wooden frame—in September, 1860, operated and exhibited it at the Maryland fair that fall, and at or prior thereto, constructed several of his double frame iron machines. In the winter of 1862-63 he reconstructed his machine and so organizing it that the driver rode on the machine while the rake was in operation, and his first machine of that construction was tried in the early harvest of 1863.

Appellant made no model until the winter of 1861; his first

operation of mowing, &c., was well known prior to the date of the appellant's original patents.

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Appellant made no model until the winter of 1861; his first machine was not completed until April or May, 1861, and not

tried until June, 1861, which machine proved a failure, and was abandoned.

In the summer and fall of 1862, he reconstructed his machine, and, as so reconstructed, it was the machine patented in and by his patent of May 20, 1862. The late summer of 1863, he devised and constructed his first iron frome machine upon which his patent for 1863 is based.

Therefore, Brown was the first (1.) to conceive; to make a model, (2.) to complete a full sized machine, (3.) to try his machine, (4.) to patent his machine, so far as relates to the two inventions here in controversy.

The invention described in Reissue 2,490, was in public use and on sale, by and with the knowledge, consent and allowance of the appellant, for more than two years prior to his application for said original Letters Patent, if, as contended for by appellant, his 1863, patent is based upon his machine built for and tried during the harvest of 1861, as his application for the patent was not filed until September 10, 1863, and the testimony shows that Hoffheins actually constructed and sold six or eight of those machines in June, 1861, which were used in the harvest of 1861.

(Int., 7, p. 80; Int., 52, p. 88-9).

Those machines were actually sold, delivered and payment received therefor, though deductions were made from the selling price owing to imperfections in the rake. As already appears, these machines failed, not from any defect in the principle, construction and mode of operation, but as stated by Hoffheins, "The rake worked well until it broke, the cast-"ings being too weak" (X Int., 373, p. 118).

The decree of the Circuit Court should be affirmed.

George Harding
John R. Bennett
Counsel for Appellee.

LEGAL AUTHORITIES ON SURRENDER AND REISSUE.

Gill *vs.* Wells, 22 Wall, 1.

Russell *vs.* Dodge ; 3 Otto, 464.

Powder Company *vs.* Powder Works ; 8 Otto, 126.

Miller *vs.* Brass Company ; 14 Otto, 350.

James *vs.* Campbell, 14 Otto, 356.

Heald *vs.* Rice, 14 Otto, 737.

Bantz *vs.* Frantz, 15 Otto, 160.

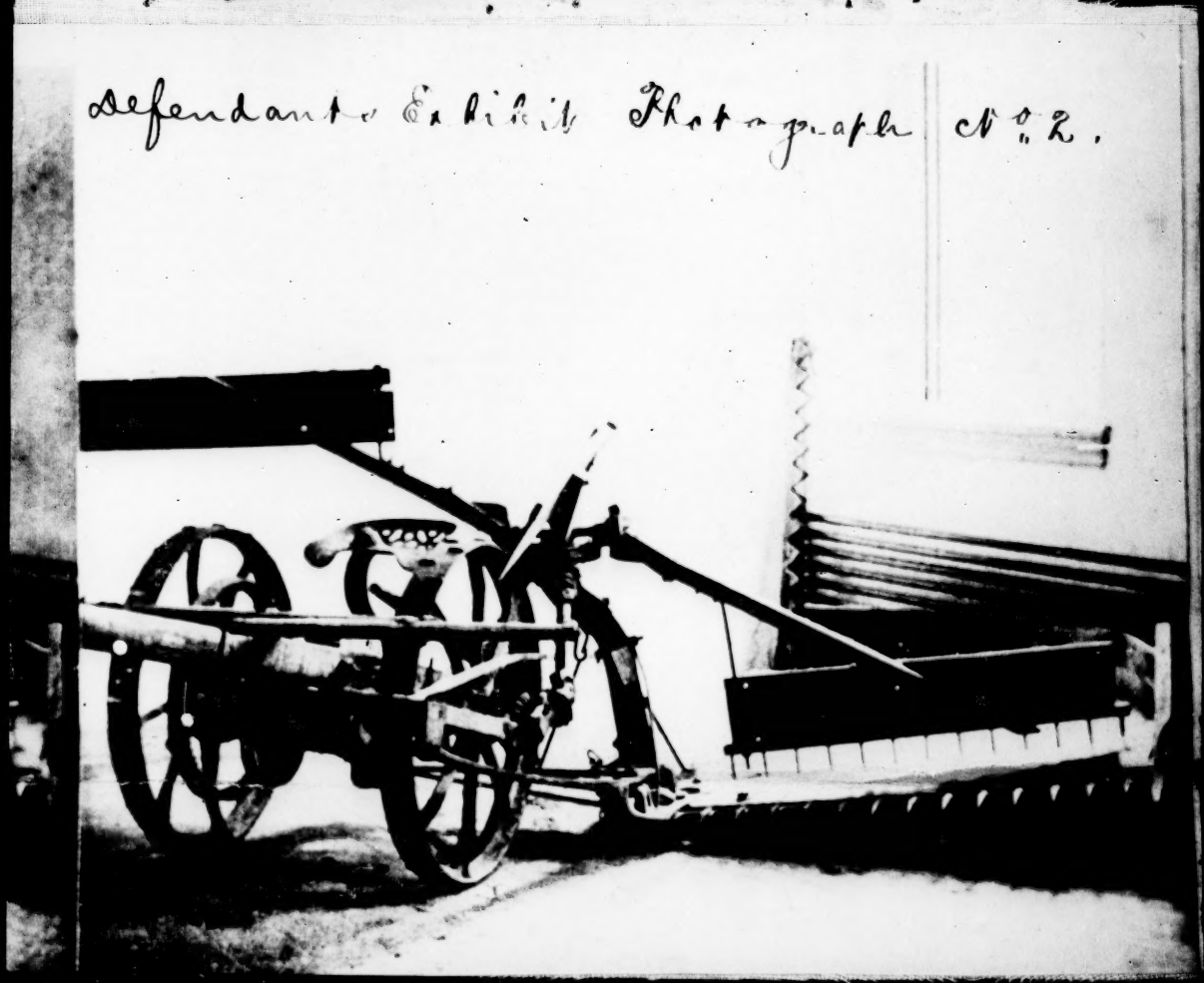
Matthews *vs.* Boston Machine Company ; 15 Otto, 54.

Moffitt *vs.* Rogers. Decided at present term. Not yet reported

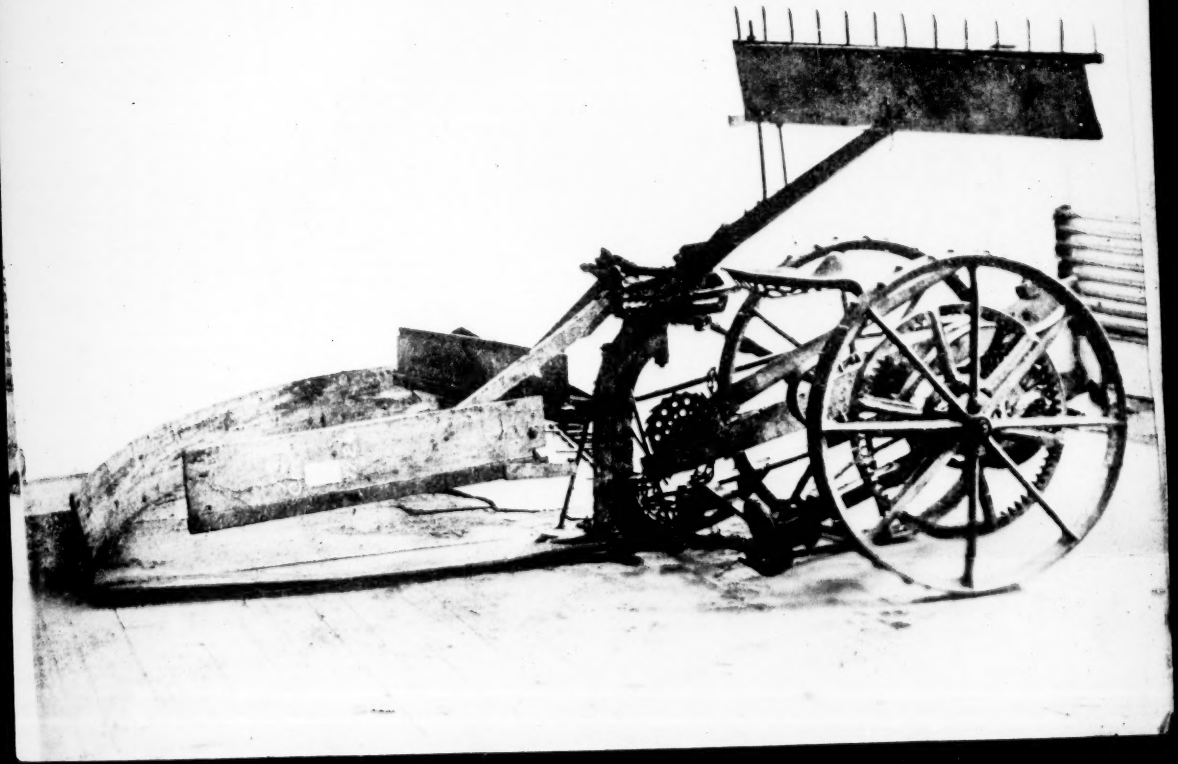
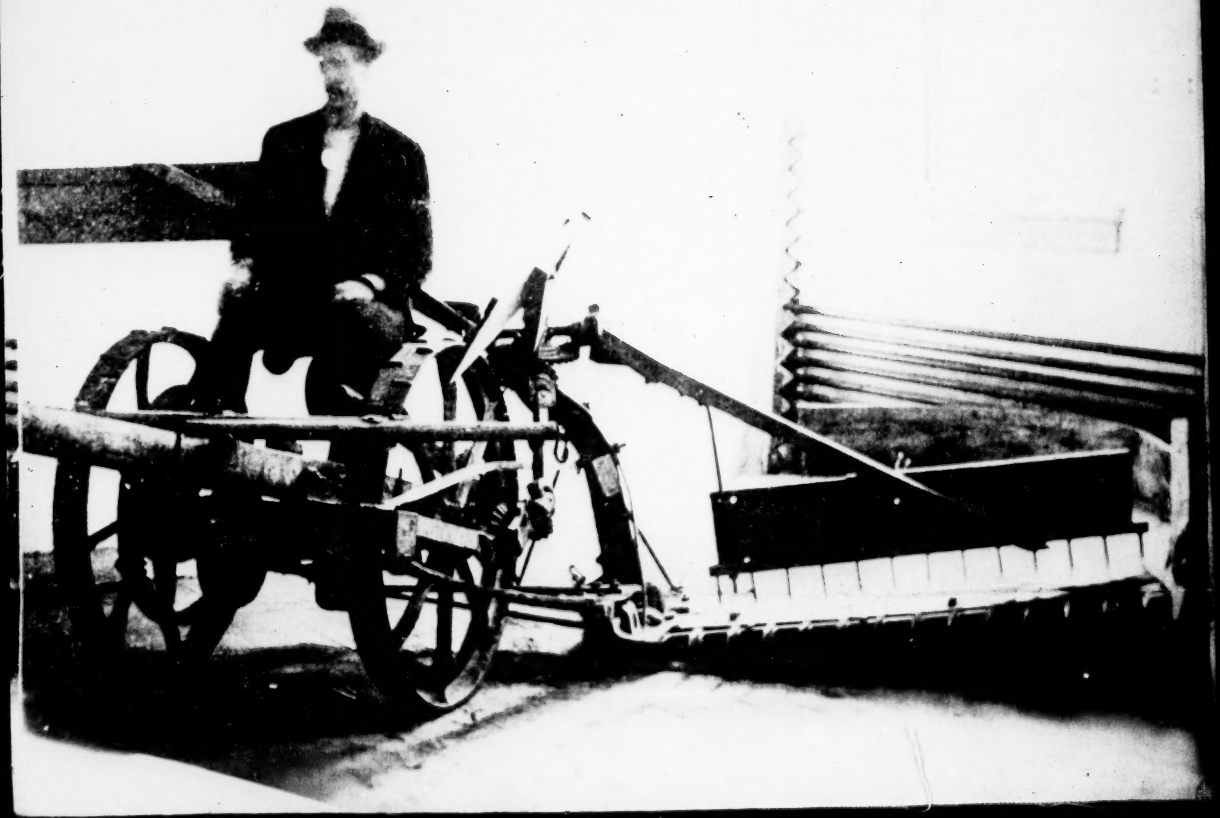
Giant Powder Company *vs.* California Powder Company, 4 Federal Reporter, 720.

Johnston *vs.* Railroad Company, 15 Otto, 539.

Defendant's Exhibit Photograph No. 2.



Defendants Exhibit Photograph No. 1.



Defendants Exhibit Photograph No. 3.